NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

Permit Number: MD0068357

2017 Annual Report

Submitted to:
State of Maryland
Department of the Environment
1800 Washington Blvd.
4th Floor, STE 440 Baltimore,
Maryland 21230-1708

Submitted by:

Frederick County

Division of Planning and Permitting
30 North Market Street
Frederick, Maryland 21701

December 29, 2017

Executive Summary

The submission of this annual progress report to the Maryland Department of Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. 11-DP-3321, MD0068357. This will be the County's third report on meeting the requirements under the new third-generation Phase I NPDES MS4 permit, which went into effect December 30, 2014. This progress report covers programs in effect within the annual reporting period for the entire 2017 fiscal year (July 1, 2016 – June 30, 2017).

Continuing progress has been made in the County's NPDES programs since the 2016 Annual Report was submitted. The sections in this Annual Report follow specific sections presented under Part IV, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented.

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List of Acronyms

AFF	Alice Ferguson Foundation
BayFAST	Bay Facility Assessment Scenario Tool
BIBI	Benthic Index of Biological Integrity
BMP	Best Management Practices
CCB	Coal Combustion Byproducts
CIP	Capital Improvement Program
CWP	Center for Watershed Protection
CY	Calendar Year
DEL	Delivered
DPR	Division of Parks and Recreation
DPP	Division of Planning and Permitting
DPW	Division of Public Works
DUSWM	Division of Utilities and Solid Waste Management
ECS	Environmental Compliance Section
EMC	Event Mean Concentration
EOS	Edge of Stream
EPA	United States Environmental Protection Agency
ESD	Environmental Site Design
FAP	Financial Assurance Plan
FCPS	Frederick County Public Schools
FCSS	Frederick County Stream Survey
FIBI	Fish Index of Biological Integrity
FY	Fiscal Year
GHC	Green Homes Challenge
GIS	Geographic Information System
HSI	Hotspot Site Investigation
ICPRB	Interstate Commission on the Potomac River Basin
IDDE	Illicit Discharge Detection and Enforcement
IIT	Interagency Information Technologies
MAST	Maryland Assessment Scenario Tool
MCWA	Monocacy & Catoctin Watershed Alliance
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
MEP	Maximum Extent Practicable
µg/L	Micrograms Per Liter
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet
MUCFC	Maryland Urban & Community Forestry Committee
NAICS	North American Industry Classification System

NFWF	National Fish and Wildlife Foundation
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
OSER	Office of Sustainability and Environmental Resources
PE	Professional Engineer
P&I	Permits and Inspections
PRWC	Potomac River Watershed Cleanup
ROW	Right-of-way
RSC	Regenerative Stormwater Conveyance
SARA	Superfund Amendments and Reauthorization Act
SCA	Stream Corridor Assessment
SCD	Soil Conservation District
SOP	Standard Operating Procedure
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plans
SW-WLA	Stormwater Wasteload Allocation
TPH	Total Petrochemical Hydrocarbons
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Sediment
WIP	Watershed Implementation Plan
WLA	Wasteload Allocation
WPRP	Watershed Protection and Restoration Program
WRAS	Watershed Restoration Action Strategy
WRE	Water Resources Element

1 Introduction

The submission of this annual progress report to the Maryland Department of Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. 11-DP-3321, MD0068357. This will be the County's third report on meeting the requirements under the new third-generation Phase I NPDES MS4 permit, which went into effect December 30, 2014. This progress report covers programs in effect within the annual reporting period for the entire 2017 fiscal year (July 1, 2016 – June 30, 2017).

The County continues to excel in stormwater management, long-term watershed monitoring, restoration and retrofit implementation, developing Geographic Information System (GIS) data, and conducting public outreach activities in accordance with the requirements of the permit. NPDES funding remains adequate to meet the conditions of the permit.

The sections in this Annual Report follow specific sections presented under Part IV, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented. An introduction to the document is presented in Section 1. Section 2, Permit Administration, provides names, functions, and contact information for all primary administrative and technical personnel and liaisons responsible for permit compliance, as well as an organizational chart (**Error! Reference source not found.**). Section 3, Legal Authority, documents the recertification from the County Attorney that the County possesses the authority to perform NPDES-related activities. Section 4, Source Identification, presents an update on the County's efforts in updating both their GIS data library and their database for tracking new and existing stormwater management facilities, along with a table detailing the status of important GIS datasets. In Section 5, Management Programs, the County presents progress summaries and updates of several permit management activities, such as erosion and sediment control, illicit discharge detection, spill response, litter and floatables, road maintenance, pesticide/herbicide use, and public outreach. Section 6, Watershed Assessment and Restoration, reports on progress of the County's watershed assessments, references the County's stormwater restoration plan, which addresses Total Maximum Daily Load (TMDL) requirements and impervious area reduction, presents restoration projects by type, and includes public participation comment review periods for County watershed assessments and plans completed in fiscal year (FY) 2017. Section 7, Assessment of Controls, discusses the County's monitoring activities, including the long-term physical, chemical, and biological monitoring program at Peter Pan Run, and monitoring at a land use-specific Best Management Practice (BMP) outfall. Results of this program, along with pollutant load estimates, biological and physical assessment data, and other related information are presented as an appendix to the report. Section 8 covers program funding in accordance with the County's Operating budget, Capital Improvement Program (CIP) budget, Financial Assurance Plan (FAP), and Watershed Protection and Restoration Program (WPRP) Annual Report. Section 9, Special Programmatic Conditions, reports on activities the County has employed in order to work towards meeting the Chesapeake Bay TMDL and offers a brief status summary of the Water Resources Element.

Similar to the last progress report submitted for the entire 2016 fiscal year (July 1, 2015 – June 30, 2016), this will be a data-driven report with the majority of program information included in the accompanying database or as appendices to the main document.

Sixteen (16) appendices have been included in this document. Contents of all appendices are also available on the CD, either in Microsoft Word, Microsoft Excel, PDF, or database format.

All sections of the document have been reproduced electronically and can be found on the accompanying CD.

2 Permit Administration

The following Frederick County personnel are responsible for the various program components that support compliance with the County's NPDES MS4 permit.

In the fiscal year of 2017 the Office of Sustainability and Environmental Resources (OSER), within the Division of Planning and Permitting (DPP), managed the County's NPDES permit. Staff and their responsibilities related to NPDES permit administration are listed below.

In addition to staff within DPP, OSER staff also works with a variety of staff from the Division of Utilities and Solid Waste Management (DUSWM), the Division of Public Works (DPW), the Division of Parks and Recreation (DPR), and the Interagency Information Technologies (IIT) Division.

Division of Planning and Permitting (DPP) – 30 N. Market St., Frederick, MD 21701

One staff person left OSER in 2017, and five were hired. On July 1, 2017, OSER left Planning and Permitting and joined the Office of the County Executive (see https://www.fredericknewspost.com/news/environment/county-executive-jan-gardner-to-oversee-sustainability-office/article_c5557118-6e2a-5de2-87a5-9cf575998e18.html). The next Annual Report will reflect this change.

- Shannon Moore, Manager, Office of Sustainability and Environmental Resources, 301.600.1413
  Manages budgets for operating funds, programs, OSER staff.

- Steven C. Horn, Division Director, Division of Planning and Permitting, 301.600.1153
  Controls budgets and ensures County management adequately supports permit. Provided additional oversight for permit management until July 1, 2017.

- Donald Dorsey, Project Manager III until June 9, 2017, Project Manager IV, 301.600.2952

Supports and manages NPDES activities, Capital Improvement Project development and implementation. Don was hired as a Project Manager III in 2017 and was promoted to PM IV when Darlene Bucciero left Frederick County.

- Darlene Bucciero, Project Manager IV, 301.600.2952
  Supports and manages NPDES activities, Capital Improvement Project development and implementation. Darlene left the County on June 9, 2017 to work for the University of Maryland.

- Jeremy Joiner, Project Manager III, 301.600.1350
  Supports and manages NPDES activities, coordinates watershed restoration efforts. Hired in 2017.

- Angelia Miller, Project Manager I, 301.600.2325
  Supports and manages NPDES activities, coordinates Industrial Discharge Permits for stormwater. Hired in 2017.

- Linda Williamson, Project Manager I, 301.600.1741
  Supports and manages NPDES activities and programs, coordinates BMP maintenance projects for stormwater. Hired in 2017.

- Suzanne Cliber, Green Homes Challenge Coordinator, 301.600.7414
  Supports NPDES activities, coordinates watershed restoration efforts related to grants.

- Kim Campbell, Administrative Specialist IV, 301.600.1416
  Administrative support for the Office of Sustainability and Environmental Resources. Hired in 2017.

- Rick Masser, Chief Environmental Inspector, Environmental Compliance Section, 301.600.3507
  Manages Sediment and Erosion Control Program. Supervises collection of information for NPDES permit that includes grading permits and stormwater facility maintenance inspections.

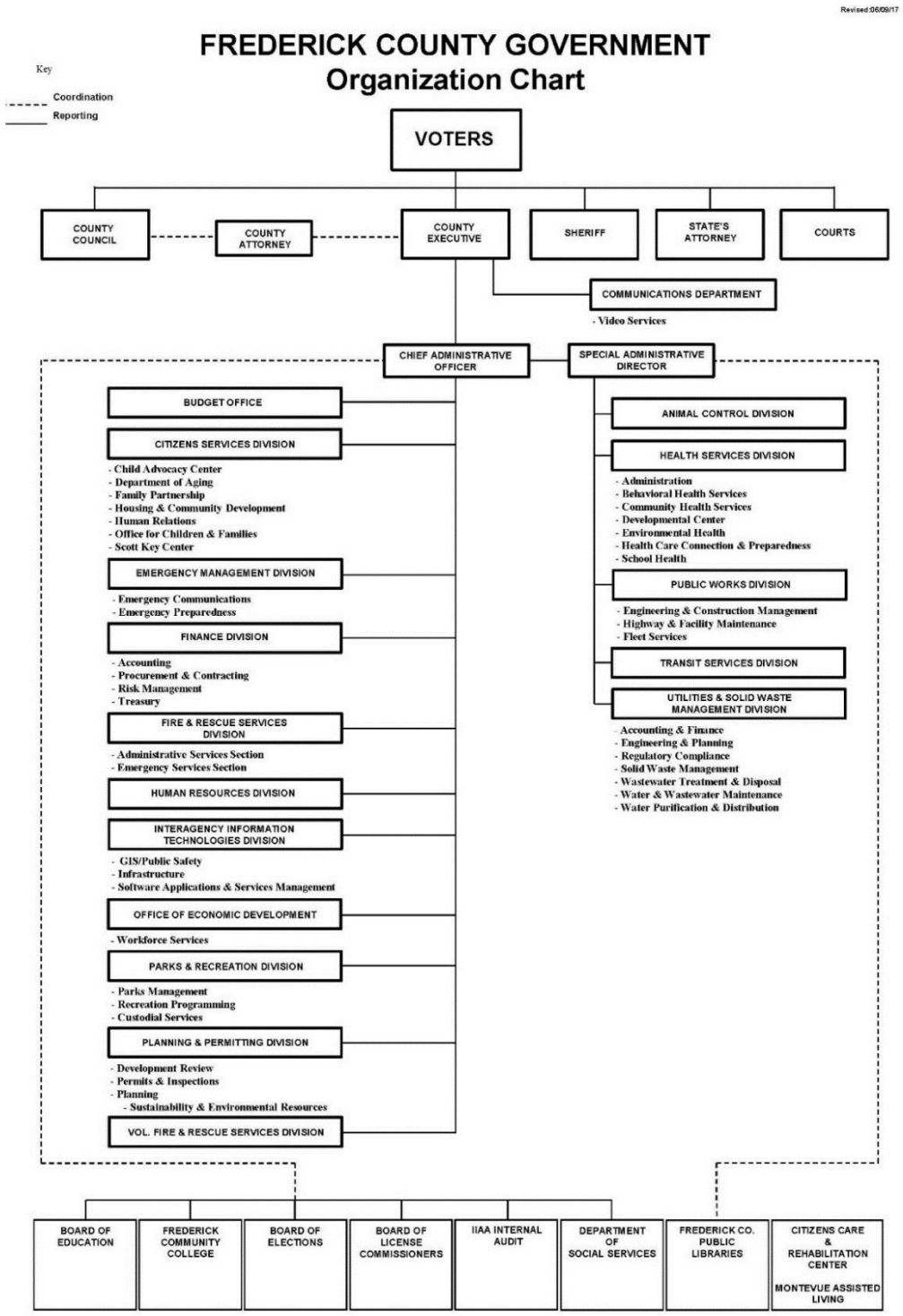
- Dave Crable, Engineering Specialist III, Department of Development Review, 301.600.1137
  Maintains database of stormwater management facilities and reviews stormwater management development plans related to the NPDES permit.

- Vijay Kapoor, Engineering Specialist I, Department of Development Review, 301.600.1560
  Reviews stormwater management development plans related to the NPDES permit.

- Tim Goodfellow, Principal Planner II, Comprehensive Planning, 301.600.2508
  Coordinates planning activities related to the NPDES permit.

Permit information is included in the related table PermitInfo of the MDE_NPDES_MS4 geodatabase.

Figure 1 - Frederick County Government Organization Chart



3 Legal Authority

Appendix A includes a letter from Assistant County Attorney, Kathy Mitchell, certifying that the County has the legal authority to meet the requirements of its permit.

4 Source Identification

This section documents permit-required efforts under Parts IV.C. 1 through 6. Frederick County has collected source identification data on all permit-required topics. The County has a centralized County GIS office within the IIT Division. This approach includes centralized functions such as the development and maintenance of core data layers, development of data standards, system administration, and general oversight of GIS activities countywide. Frederick County GIS distributes countywide base maps and Orthophotography. In addition, Frederick County GIS offers a free GIS data download service that includes GIS Base Data, Orthophotography, Contour-Planimetric Data, and Parcel Data. This service can be found at http://www.frederickcountymd.gov/5450/GIS-Data-Products under "Download GIS Data".

The Frederick County GIS office continually progresses in enhancing the County's GIS capabilities and in compiling source identification data. OSER, DPP and ECS collaborated with Frederick County IIT and staff to develop and implement digital submission standards for improvement and as-built plan submissions. For further details of the outreach program, see section 5.6.

4.1 Storm Drain System

The County currently maintains a Stormwater System database which includes data for stormwater inventory records for all infrastructure including culverts, storm drains, structures, ditches, outfalls, and ponds. Storm drain system data is contained within the Outfall feature class (1,405 records) and includes related drainage areas, and other related tables. Major attributes that are captured in these tables include IDs, structure characteristics, status, owner, and general comments. In addition to the required feature classes, Frederick County maintains a storm drain and structure inventory which includes pipes (18,851 records) and structures (19,214 records).

4.2 Industrial and Commercial Sources

A list of the total number of industrial and commercial facilities that the County has determined may have the potential to contribute significant pollutants is included in Appendix B. Information provided in this appendix includes: facility name, company, address, city, state, zip code, respective North American Industry Classification System (NAICS) code, and facility description.

4.3 Urban Best Management Practices

At present, Urban Best Management Practices (BMPs) are included in the MDE_NPDES_MS4 geodatabase. Records for stormwater facilities will be included in BMPPOI feature class and includes associated drainage areas and other related tables. Major attributes that are captured in these tables include

structure ID, BMP type, BMP description, and acres treated. New facilities are entered into the database upon approval of the as-built survey.

In its October 31, 2017 review of the 2016 Annual Report, MDE "requests that the County provide the status of as-built certifications for all completed BMPs in the next Annual Report."

The County initiated a conversation on this topic in an MDE/MS4 meeting in 2016 and has been working with MDE, Anne Arundel County, and Baltimore City to determine appropriate procedures for assigning as-built and database dates depending on the type and quality of records available. At the MDE/MS4 meeting held November 3, 2017, MDE indicated they would issue a policy describing the minimum criteria for receiving credit, with the expectation that permittees would provide a standard operating procedure (SOP) describing how it will be addressed. Frederick County anticipates the policy will use the following language:

- BMP construction completion information:
    - BMPs pre 2002 need construction completion documentation
    - BMPs post 2002 require as-built certification
    - When no BMP as-built or construction completion documentation is available, equivalent construction completion assurances need to be provided from a robust inspection program

Frederick County intends to use the approach described in the As-Built Protocol Recommendation memo submitted to MDE August 17, 2017, with receipt confirmed by Ray Bahr, attached as Appendix C. Construction built dates will be determined based on available data described in the following scenarios:

- Scenario 1 – BMP with As-Built Plans Available
- Scenario 2 – BMP with no As-Built, but with Plan and SWM Report
- Scenario 3 – BMP with no As-Built, but with Plan and Acceptable Research
- Scenario 4 – BMP with Acceptable Research, No Plan or Report Available
- Scenario 5 – BMP Owned and Maintained by Single Lot Residence
- Undergoing Research – Status for Facilities where Research is being performed

4.4 Impervious Surfaces

The MS4 boundary and impervious surfaces have been compiled for Frederick County. Impervious data are included in the MDE_NPDES_MS4 geodatabase table, ImperviousSurface.

As noted in greater detail in Section 6.2, Frederick County Government submitted a supplemental impervious area assessment to the Maryland Department of the Environment (MDE) on May 1, 2017 in response to its February 17, 2017 request. MDE asserts in its October 31, 2017 review that contrary to the County's baseline calculation (using the method it determined to be consistent with the Clean Water Act and Code of the Federal Register) of 5,063 untreated acres, that the baseline (using MDE's term of art) is 13,198 acres. The County estimated its 20% retrofit to be 1,013 acres; however, MDE's estimate is

2,620 acres. MDE invited the county to redo its impervious cover analysis and resubmit in the fourth year Annual Report, which Frederick County is in the process of doing under contract with KCI.

4.5 Monitoring Locations

The County maintains and updates, as needed, an inventory of biological and chemical monitoring sites. The 2017 data are included in the following tables in the MDE_NPDES_MS4 geodatabase: BiologicalMonitoring (9 records), ChemicalMonitoring (34 records), LocalConcern (0 records), MonitoringSite (11 records), and MonitoringDrainageArea (11 records). Major features that are captured in these tables include site ID, date and time, assessment results (e.g., BIBI/FIBI, habitat scores, water quality measurements), monitoring drainage area, and general comments. Historical data is also provided in the MDE_NPDES_MS4 geodatabase in the tables referenced above.

Also in its Annual Report Review, MDE requests the County use "999" where there is no data to report rather than using "-9999". The County has adjusted the values in the geodatabase to reflect this request and will also ensure all data fields are completed. In another comment in the Annual Report Review, MDE states that temperature data is "missing for stormflow outfall measurements." Historically, Frederick County did not install a temperature data logger for the outfall station; rather, a YSI multi-parameter probe has only been deployed at the instream station. Based on MDE's feedback, a temperature logger was deployed at the outfall on 1/20/2017 and initial results are referenced in the monitoring section of the report, 7.1.2. Additionally, MDE has noted in previous Annual Report reviews that except for minor data deficiencies in the chemical monitoring section of the geodatabase, the County met reporting requirements. However, water temperature values were missing for stormflow outfall measurements, and the *E. coli* and total petrochemical hydrocarbons (TPH) values were missing for most storms in the "peak" and "falling" categories. MDE recognized the challenges involved in capturing these data, and requested that the County make an effort to capture TPH and *E. coli* samples for as many storms as possible. The County appreciates MDE's recognition regarding these challenges and is working in ensuring these readings will also be captured for future Annual Report Submission. In August 2017, the County invested in significant improvements to the monitoring sites including the purchase of new water quality monitoring equipment for continued assurance that the monitoring requirements are met. The next Annual Report will reflect this change.

4.6 Water Quality Improvement Projects

Water Quality Improvement Projects proposed within the reporting timeframe of 7/1/16 through 6/30/17 are listed below. Additional information about these projects can be found in the County's Stormwater Restoration Plan and/or Financial Assurance Plan.

- Open Section Road Assessment Phase II
- Bar T Regenerative Stormwater Conveyances (RSCs) and Stream Restoration
- County-owned Stormwater Facility Retrofits
    - County owned BMP #566 – Dudrow Pond 3
    - County owned BMP #800007 – Health Department

  - County owned BMP #800005 – Transit BMP B
  - County owned BMP #3 – Fountaindale South
  - County owned BMP #38 – Green Hill Manor #1
  - County owned BMP #27 – Roundtree
- Catoctin Creek Watershed Study
- Double Pipe Creek Watershed Study
- Potomac Direct Watershed Study

Water Quality Improvement Projects that were under design/contracted during the reporting timeframe of 7/1/16 through 6/30/17 are listed below:

- Urbana Pond Retrofits (15 ponds)
- Point of Rocks Stream Restoration
- Point of Rocks Pond Retrofit
- Reforestation Program
- Little Hunting Creek Stream Restoration Phase 1
- County-owned Stormwater Facility Retrofits
  - County-owned BMP #2 – Clearview
  - County-owned BMP #24 – Tranquility
  - County-owned BMP A – Law Enforcement Complex
  - County-owned BMP #685 – Green Hill Manor #2
  - Cooperative Extension Building New Stormwater

Water Quality Improvement Projects that were completed during the reporting timeframe of 7/1/16 through 6/30/17 are listed below:

- Englandtowne Stormwater Pond Retrofit
- Englandtowne Stream Restoration
- Hunting Creek Upper/Lower Mainstem Drainage Study
- Ballenger Creek Stormwater Master Plan
- County-owned Property Retrofit Assessment
- Point of Rocks Storm Drain Infrastructure Assessment
- Upper Monocacy Watershed Assessment
- Lower Monocacy Watershed Assessment

Water Quality Improvement Projects that were completed within the current permit term are listed below:

- Hunting Creek Upper/Lower Mainstem Drainage Study
- Ballenger Creek Stormwater Master Plan
- County-owned Property Retrofit Assessment
- Englandtowne Stormwater Pond Retrofit

- Englandtowne Stream Restoration
- Point of Rocks Storm Drain Infrastructure Assessment
- Upper Monocacy Watershed Assessment
- Lower Monocacy Watershed Assessment

5 Management Programs

This section documents permit-required efforts under Parts IV.D. 1 through 6. Frederick County continually evaluates its stormwater management programs in an effort to identify and bring about needed improvements as required under its NPDES permit. The County continues to evaluate its progress and effectiveness to control stormwater discharges to the maximum extent practicable (MEP). Current program components, improvements made during the timeframe covered in this report, and plans for future activities, particularly as the County continues to implement management programs under its new permit, are discussed below.

5.1 Stormwater Management Programs

Frederick County maintains its current Stormwater Management Program in compliance with Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland. The County will continue to do so through plan review and inspection of all developer projects, through implementation of the 2000 Maryland Stormwater Design Manual (Effective October 2000, Revised May 2009; MDE 2000), and through the Stormwater Act of 2007.

5.1.1 Maintenance Inspections of Stormwater Management Facilities

The Department of Permits and Inspections, Environmental Compliance Section (ECS) conducts a program of preventative maintenance inspections of constructed and functioning stormwater management facilities located within Frederick County, and most of its municipalities. Excluded from ECS jurisdiction are facilities located within Frederick City, and within the municipal boundaries of Mount Airy. As required under the County's MS4 permit, the County conducts these inspections on a sequential basis of once within a year after the as-built drawing approval, and then on a triennial basis thereon in perpetuity.

Responsible parties of noncompliant facilities receive notices that outline the failings observed by the inspector, what has to be completed to correct the failings, and a timeframe in which the corrections should be completed. Appropriate follow-up inspections and escalating enforcement techniques are completed, as necessary, until compliance is obtained. Frederick County is continuing to improve the process of enforcement to ensure that owners comply and resolve failing facilities within an acceptable timeframe. Staff additions within OSER will supplement oversight for compliance of failing facilities.

For fiscal year (FY) 2017, Frederick County's Urban BMP database had 1071 BMPPOI points and 1182 related BMP records. The following inspections were completed during 7/1/16 through 6/30/17:

- Number of BMPs inspected: 635
- Number of initial inspections (Identified in the gdb with 'FY17 Initial'): 520

- Number of BMPs receiving as-built inspection in FY17 (Identified in the gdb with 'As-Built Inspection', with Reporting Year 2017): 20
- Number of 2017 BMPs FAILING initial inspection: 87
- Number of 2017 BMPs FAILING the initial inspection but subsequently PASSING: 63
- Number of 2017 BMPs FAILING the initial inspection and are still currently FAILING: 24

- Number of outstanding issues at the end of FY16: 16
- Number of previously failing BMPs where issues were resolved: 9
- Number of previously failing BMPs (FY15, FY16), still failing: 7

- Number of total failing BMPs to be carried over in follow-up inspections in 2018: 31
- Number of facilities with an out-of-date-inspection: 0

As of December 2017, a total of 31 facilities are failing their most recent inspection, 24 of which are recent failures from FY17 and are being addressed by ECS through measures stated above. The seven failing facilities that have carried over from 2016 are expected to have the following steps taken for remediation. For Oakdale High School (785), the issue will be escalated beyond the facility maintenance director to an administrator. ECS expects compliance after this coordination, but will pursue fines if maintenance steps are not taken. For Buckingham Hills, (329) the facility was inspected out of cycle and was never re-inspected after repairs were made. Inspectors are following-up and the issue expects to be resolved in the near short-term. For Fountain Rock Manor (747), ECS issues of determining the responsible owner have been resolved. Now that the owner is known, enforcement actions will follow if BMP remains incompliant. New Market Food Lion (759) is in the process of a new subdivision, and the facility is expected to be replaced. Crestwood Middle School (848) has two BMPs treating it, a biofilter and extended detention pond. According to ECS, its failing triennial is being addressed through an additional as-built verification which is currently underway. ECS has been successfully obtaining as-builts for schools in the County, and this facility is expected to be compliant at the end of the as-built verification process. The Greens Pond (465) is being escalated, and the County will follow through with penalties if maintenance activities are not followed through.

All triennial inspections are recorded within a proprietary Permitting and Development Review application, Hansen Information Technologies v7.7. The appropriate data is exported from the database using select and parameter queries from an outside data management software. The subsequent data is then imported into the geodatabase, with a GEN_COMMENT to assist in identifying relevant FY17 inspections. Inspection data stored in the BMPInspections table (1,174 records) represents all triennial inspections for the stormwater management program, including those outside the reporting term.

5.1.2 Implementation and Updates of 2000 Maryland Stormwater Design Manual

Frederick County implemented the stormwater management design policies, principles, methods, and practices of the 2000 Maryland Stormwater Design Manual. Subsequent changes were made to the Code of Maryland Regulations through the County's Stormwater Management Ordinance and its Design Manual, on June 5, 2001. It became effective July 1, 2001. The Ordinance amended the stormwater

management regulations to adopt the 2000 Maryland Stormwater Design Manual Volumes I and II. The Board of County Commissioners adopted the County's Storm Drainage and Stormwater Management Design Manual effective January 2, 2003. This document helps address safe conveyance of runoff in channels, pipes, swales, culverts, etc. to stormwater management facilities and/or receiving channels.

The most significant improvements to the County's implementation of the MD 2000 design guidelines continues to be related to the participation with MDE in establishing the necessary changes in law and design guidelines to meet the Stormwater Act of 2007. Frederick County adopted the Stormwater Act of 2007 on May 4, 2010. Frederick County is committed to working with the development community and the State to improve the implementation of these regulations, and to achieve the best product for moving forward with the environmental site design implementation in an efficient manner.

Frederick County participates in workgroups, public meetings, design evaluations, and other steps involved in administering the stormwater management regulations and design guidelines. These discussions have also been used to assist staff in their evaluation of design approaches that are submitted for review in accordance with the MD 2000 design guidelines. Specifically in FY17, The County launched an expansion of the current approval process to include digital submissions. To implement this process, The County held several public meetings with the engineering community to expand final approved submissions to include digital submissions for approved improvement plans and as-built submissions. The new format available at https://frederickcountymd.gov/3199/Applications-Checklists enables the County's GIS department to receive a digital copy of all the required stormwater management for permit reporting. For further details of the outreach program, see section 6.3.

Evaluation: The County continues to maintain its stormwater management program in accordance with State stormwater management laws. This includes implementation of appropriate County ordinances. The County remains committed to implementing the latest stormwater management technologies while addressing the concerns of the development community. In FY17, the County's Environmental Compliance Section (ECS) completed 607 triennial inspections, 520 of which were initial inspections, on 1182 Stormwater Management Facility BMPs. The County continues to work with the development community and MDE to better understand the goals of the 2000 Maryland Stormwater Design Manual and the objectives of the changes associated with the Stormwater Act of 2007. Additionally, the County will continue to educate both the development community and the general public about how to determine the proper type of design for site-specific areas, as well as about facility installation timetables and maintenance issues. Staff will continue to work to address SWM earlier in the process to achieve the best product at the end of the process, as required by the changes associated with the Stormwater Act of 2007.

County BMP inspection information is included in the MDE_NPDES_MS4 geodatabase table: BMPInspections. These inspections include information on status, inspection date, and re-inspection status, if relevant.

5.2 Erosion and Sediment Control

Frederick County's Erosion and Sediment Control Program is administered by the Department of Permits and Inspections, Environmental Compliance Section (ECS). ECS utilizes inspectors that are specifically knowledgeable in Environmental Compliance inspection and enforcement in order to maintain an acceptable Erosion and Sediment Control Program in accordance with Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland. The County's program was evaluated by MDE on October 20, 2017. A follow-up email from MDE requesting additional information was received December 11, 2017. The County responded and expects to receive notification for a full two-year CY19 renewal.

ECS continues to receive budgetary support for equipment and automation, such as:

- Four-wheel-drive (4WD) vehicles,
- Full mobile connectivity through use of Dell laptop computers for field work,
- iPhone 6 mobile cell phones with hard cases, and
- Hands-free devices are also provided for in-vehicle use.

Continued program enhancements include:

- Division of Planning and Permitting (DPP) engineering and inspection staff works closely with the local Soil Conservation Districts (SCDs) to conduct a joint approach to sediment control and stormwater management plan review. The mutual efforts to obtain Environmental Site Design to the Maximum Extent Practicable (ESD to the MEP) should prove successful in producing better designed plans.
- ECS developed a plan to implement quarterly meetings in calendar year (CY) 2018 with SCD to discuss plan review issues which will lead to better site control.
- DPP, and the County in general, are striving to improve relationships with builders, developers and related professionals by providing an open and interactive process in which every opportunity is given to receive input on ways to improve or enhance programs.
- ECS takes part in quarterly Permitting Outreach Meetings to establish relationships with the development community, and to inform and discuss ESD practices.
- DPP and ECS collaborated with Frederick County IIT and OSER staff in quarterly Development Review Outreach Meetings to implement digital submission standards for improvement and as-built plan submissions. For further details of the outreach program, see section 6.3.
- The Chief Environmental Inspector attends weekly meetings with the Permits and Inspections (P&I) Director, Permits Services Manager, and fellow Chief Inspectors of other disciplines. This interaction provides input and feedback from all parties and has proven to be extremely helpful and beneficial.
- Frederick County continues its support in meeting the needs of the state and the expectations of its citizenry to be environmentally sensitive and proactively protective of our natural resources.

Erosion and sediment control data for 2017 are included in the MDE_NPDES_MS4 geodatabase. Related tables include ErosionSedimentControl (1 record) and QuarterlyGradingPermits (41 records). Major

features that are captured in these tables include ID, contact information, permits issued/active, number of inspections, number of fines, number of violations, and general comments.

5.2.1 Responsible Personnel Certification Classes

As originally reported in Frederick County's 2015 Annual Report, MDE confirmed that the RespPersonnelCertInfo table reporting requirement is eliminated.

5.2.2 Construction Site Data

Frederick County ECS provides quarterly reports of all grading activities disturbing more than one acre to MDE to cross reference against their NOI records. The data submitted includes site name, site owner and address, the amount of disturbed area, the local grading permit number, site location, and the type of development (e.g., residential, commercial, etc.).

Evaluation: Frederick County's Erosion and Sediment Control program is well established and is constantly striving for improvement. The County's goal is to establish itself as a model for which the State, other delegated jurisdictions, and its citizens may be proud. Frederick County continues to work closely and cooperatively with the local SCD. The cooperative nature of that relationship has resulted in several policy discussions designed to improve and enhance the sediment control program. Through its quarterly reports, the County met requirements for the electronic reporting of earth disturbances in the period of 7/1/16 to 6/30/17.

5.3 Illicit Discharge Detection and Enforcement Program

Frederick County continues to implement its Illicit Discharge Detection and Enforcement (IDDE) Program. The County's IDDE Program identifies potential illicit discharges in several ways: (1) through a systematic screening approach of outfalls more likely to demonstrate an elevated risk of illicit discharge, based on land use characteristics (the majority of sites were identified by this proactive approach); 2) through on-call dry weather screenings completed as a result of outfalls identified during as-built inspections or triennial maintenance inspections; (3) visual surveys of parcels with industrial and commercial land uses (hotspot surveys); and (4) through citizen and agency reporting mechanisms such as non-County agencies reporting spills to the National Response Center (NRC).

A complete report of Frederick County's Illicit Discharge Detection and Elimination Program from 7/1/16 to 6/30/17, including screen methods and results, is included as Appendix D.

In an effort to continue to meet the requirements of Part IV.D.3.c of the permit to maintain a program to address and respond to illegal, discharges, dumping, and spills, OSER has a hired a full-time employee dedicated to the IDDE and industrial discharge permit compliance programs. Additionally, this Annual Report along with future Annual Reports will include follow-up documentation of remediation actions in response to MDE's October 31, 2017 FY16 Annual Report review stating, "MDE requests that in future reports, the County provide follow-up documentation that addresses the investigation and remediation of these types of discharges." Discharge documentation can be found in Appendix E.

In their April 15, 2016 MS4 Annual Report review, MDE requested that, "the County update its IDDE procedures to include a jurisdiction-wide prioritization of outfalls for MDE's review in the County's next Annual Report and to begin implementing these procedures in FY2017." Per this request to improve the IDDE screening prioritizations, Frederick County Planning and Permitting Division, Office of Sustainability and Environmental Resources (OSER), designated Versar as the consultant on contract to revise the County's IDDE protocol to develop a methodology for systematic IDDE investigation. The revised protocol was included in the FY16 Annual Report, and implemented in FY17. The screening protocol prioritized outfalls based on their association and proximity to the selected visual surveys that fiscal year. This prioritization process became the primary method to meet the 100 outfall screening requirement, supplemented by as-built or triennial inspections, as necessary.

The revised protocol is being submitted to MDE by December 29, 2017 separate of this Annual Report for review.

5.3.1 Systematic Outfall Field Screening

Prior to July 1, 2016, ECS field inspectors noted evidence of dry weather flows, if present, at all Stormwater Management Structure "As-Built" inspections and triennial maintenance inspections as the primary method of identifying illicit discharges.

Using the new protocol, the County contracted with Versar to conduct IDDE screenings (i.e., physical inspections and water quality testing) during the reporting period. In accordance with the revised protocols, field inspectors noted evidence of dry weather flows, if present, at all outfalls selected as target sites, as defined below.

If flowing water was present in the network, under otherwise dry conditions, inspectors documented conditions relevant to the discharge, and sampled the effluent for a defined set of chemical constituents, including ammonia, conductivity, detergents, phenols, fluoride, pH, potassium, copper, and chlorine. Ammonia, detergents, phenols, copper, and chloride are tested using an ampoule field test kit; a sample is sent to Martel Laboratories in order to test for potassium; conductivity and pH are measured using a multiparameter probe; and fluoride is measured using an Extech Fluoride Meter. If analytical results or field inspections indicated potential illicit connections, the conveyance network contributing to the outfall, and surrounding areas were investigated to identify possible sources of pollution. A follow-up sampling event was conducted within 24 hours of receipt of analytical data to retest the parameters that had exceeding screening criteria in the initial test. If the second assessment also indicated test results out of the accepted ranges, Versar staff alerted County personnel via a written report of the findings. County staff then contacted the landowner or responsible party regarding the violation and the corrective actions.

In the 2017 reporting period, three areas within the County were targeted for systematic screenings: the 5700–5800 blocks of Urbana Pike (Maryland Route 355), the 5200–5800 blocks of Buckeystown Pike (Maryland Route 85), and a larger extent of the County ranging from Liberty Road, Frederick, MD to Sabillasville, MD. These screenings prioritized selected hotspot locations for the visual surveys that were

identified in FY15, FY16, and FY17 addressing MDE's FY15 Annual Report review comment that "outfalls are not necessarily selected based on a high potential for pollutants." A total of 154 outfalls were screened within these areas with approximately one-third occurring in each identified location.

Data pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.3.1.1 Results of *Systematic Outfall Field Screening*

Figure 2 below illustrates the locations of sites successfully screened for outfall investigations, identified through the systematic approach. Summaries of Versar's screenings are included in the Illicit Discharge Detection and Elimination Program report in Appendix D.

Of the 154 systematic inspection screenings completed, four had dry weather flow during the initial screenings and were subsequently sampled. One confirmed illicit discharge was identified at outfall OF238, located on the property of A&S Sales, 9834 Liberty Road, Frederick, MD. Detergent levels exceeded the corresponding illicit discharge action levels during both the initial sampling (3.0 mg/l) and resampling (0.75 mg/l) events. The County investigated A&S Sales but did not identify any use of detergents in the company's business process. The business owner claims the pipe conveying the sampled discharge runs beneath the property and A&S does not contribute to it. Further investigation of the conveyance system is required for source identification and corrective actions.

In its review of the 2016 Annual Report, MDE noted, "The County discovered dry weather discharges and conducted chemical testing at six outfalls. MDE notes that the submitted IDDE table contained only five entries addressing dry weather discharges, and requests the County exercise diligence to ensure that data reported in the report narrative match that contained in the database submissions," and, "MDE requests that the County be watchful for data entry errors." The County has reviewed the table to accurately document the IDDE effort in FY17.

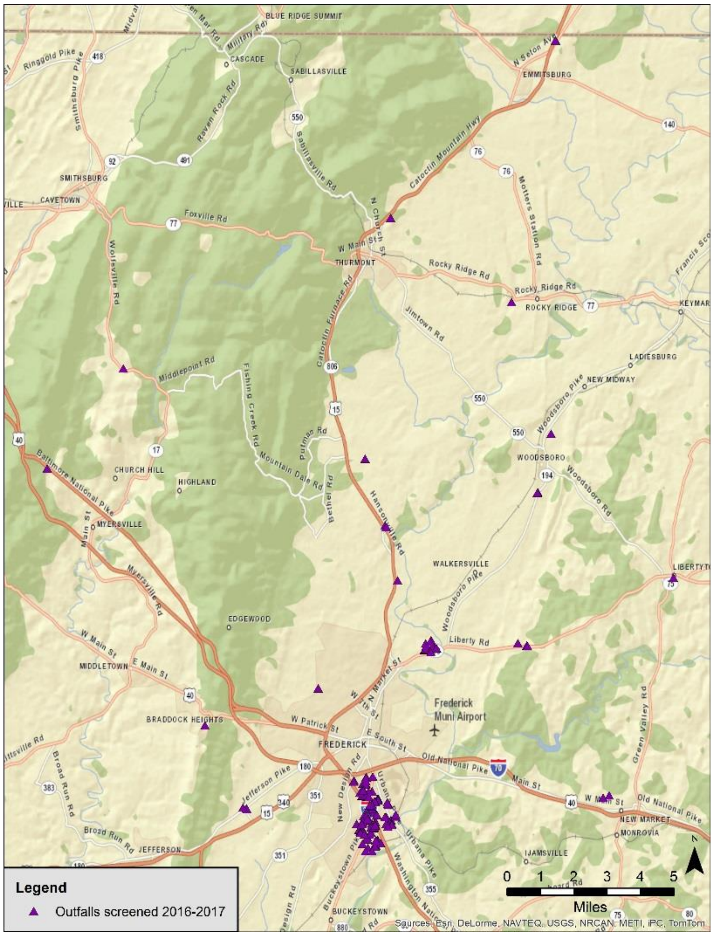


Figure 2 - Outfalls successfully screened in the FY17 period

5.3.2 As-Built and Triennial On-call Outfall Field Screening

ECS field inspectors note evidence of dry weather flows, if present, at all Stormwater Management Structure "As-Built" inspections and at every triennial maintenance inspection. If water is present, inspectors report this information to the County's Office of Sustainability and Environmental Resources OSER within 24 hours of the original inspection. If the flow has indicators such as color, odor, or suds present, OSER sends an investigation request to Versar, Inc. to conduct an IDDE screening. If water quality test results or inspections indicate potential illicit connections, Versar conducts source identification investigations in the same manner as that detailed above in section 5.3.1, and in *Frederick County's Dry Weather Screening Program: Response, Site Screening, and Reporting Protocols* (Versar, 2016).

Versar conducted IDDE screenings at two outfalls that were observed to have dry weather flows during the as-built or triennial inspection-guided effort. However, no illicit discharges were identified. Summaries of these screenings are included in Appendix D.

Data pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.3.3 Visual Surveys

As part of the IDDE program, there is a requirement to conduct annual visual surveys of commercial and industrial areas for discovering, documenting, and eliminating pollutant sources. In FY17, surveys were chosen by location to allow for the most efficiency. Sites surveyed during FY17 are identified in Figure 3, and a copy of the Hotspot Site Investigation form used to evaluate sites is included in Appendix F.

Areas classified as potential hotspots had minor issues such as open dumpsters and small amounts of staining on the ground from sources like grease or motor oil. Confirmed hotspots had at least one category – vehicle operations, outdoor materials, waste management, or general facility – that had an observed pollution source. Severe hotspots had more than one observed source of pollution.

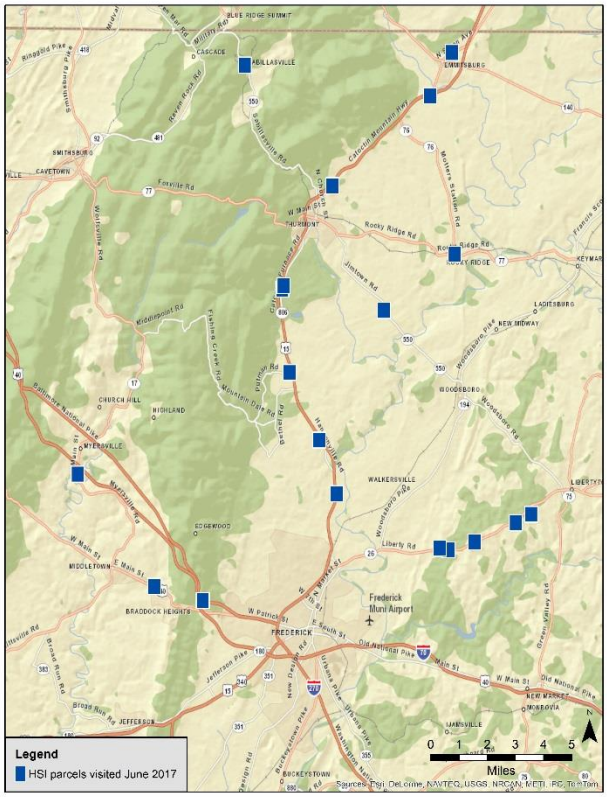


Figure 3 - Commercial and industrial visual inspection locations, June 2017

5.3.3.1 Results

Visual surveys were conducted between June 6 and June 20, 2017 at 19 of the 119 total sites to be visited throughout the 5-year permit. Table 1 identifies the location and date of each survey.

The surveys identified three potential hotspots, three confirmed hotspots, and one severe hotspot. Notices were issued to the facilities outlining the survey results, and indicating the facilities' status. The notices included recommendations to correct the deficiencies and informed the owner that a re-inspection was to be conducted to ensure all recommendations had been taken into account.

Initial inspections identified three potential hotspots, A&S Sales, Frederick Performance Center, and Complete Auto Diagnostics, had minor issues with outdoor storage management. The three confirmed hotspots, TJ's Roadhouse, P&M Transmissions, Inc., and Mike's Auto Body Collision had various problems with outdoor storage and waste management. P & M Transmissions, Inc. and Mike's Auto Body Collision also had minor issues related to their vehicle operations. Finally, Frederick Equipment Co. was identified as a severe hotspot with poor outdoor storage and poor waste management

Follow-up inspections revealed all identified businesses improved their practices allowing all but three of the businesses to be reclassified as in compliance and not a hotspot. The remaining potential hotspot sites included Frederick Equipment, Co.; P & M Transmissions, Inc.; and Complete Auto Diagnostics.

In their October 31, 2017 FY16 MS4 Annual Report review, MDE stated, "[the County] should consider prioritizing sites with violations for screening on a more frequent basis than once per permit term." OSER plans to revisit any previously surveyed hotspots with violations from FY15, FY16, and FY17 in FY18 as an effort for screening on a more frequent basis.

Mike's Autobody Collision had vehicle washwater runoff on their property. The business owner will be working with MDE's Wastewater Permits program to apply for the State's 16-VW permit. An email from Mike Eisner from MDE noting this commitment is included in Appendix E.

Table 1 - Businesses Visited in FY17

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
June 6, 2017						
4-OUTDOOR	10409 OLD LIBERTY RD	Not	N	-	NOT A HOTSPOT	-
A & S SALES	9834 LIBERTY RD	Potential	Y	Excess Trash and unlabeled storage containers	NOT A HOTSPOT	-
AVALON RESTAURANT	9800 LIBERTY RD #A	-	-	-	-	PERMANENTLY CLOSED

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
LIBERTY TOWN BBQ	11339 LIBERTY RD #3	-	-	-	-	Now: House of Style
June 13, 2017						
BALD D'S BBQ	11339 LIBERTY RD	Not	N	-	NOT A HOTSPOT	Now: Frank's Pizza and Restaurant
ROCKVILLE-MARRIOT	9640 LIBERTY RD	-	-	-	-	PERMANENTLY CLOSED
SILVER MAPLE	5018 OLD NATIONAL PIKE	-	-	-	-	PERMANENTLY CLOSED
June 16, 2017						
BILL'S AUTOBODY	12440 CREAGERSTOWN RD #A	Not	N	-	NOT A HOTSPOT	Now: New Bill's Autobody
CHUBBY'S BARBEQUE	16430 OLD FREDERICK RD	Not	N	-	NOT A HOTSPOT	-
DALES PLACE	12841 CATOCTIN FURNACE RD	Not	N	-	NOT A HOTSPOT	Now: The Furnace Bar & Grill
EUNICE'S	7800 BIGGS FORD RD #E	Not	N	-	NOT A HOTSPOT	Now: Nannie's Diner
FITZGERALD'S AUTO & CYCLE SVC	17307 N STEON AVE	-	-	-	-	-
FREDERICK PERFORMANCE CTR	6830 PUTMAN RD #C3	Potential	Y	Poor Outdoor Material storage practices	NOT A HOTSPOT	-
HOWARD COUNTY EQUIPMENT	9640 LIBERTY RD	Severe	Y	Poor outdoor material storage practices	POTENTIAL HOTSPOT	Now: Frederick Equipment Co.
MIKE'S AUTO BODY COLLISION	12917 CATOCTIN FURNACE RD	Confirmed	Y	Runoff from washbay and excessive trash	POTENTIAL HOTSPOT	Applying for the 16-VW MDE Permit
RODDY CREEK AUTO & STORAGE	7702 RODDY CREEK RD	Potential	Y	Excessive trash	POTENTIAL HOTSPOT	Now: Complete Auto Diagnostics
RUBE'S CRAB SHACK LLC	17308 N SETON AVE	Not	N	-	NOT A HOTSPOT	-
STULL'S SERVICE STATION	11024 HESSONG BRIDGE RD	-	-	-	-	PERMANENTLY CLOSED
T J'S ROADHOUSE	11037 LIBERTY RD	Confirmed	Y	Excessive trash	NOT A HOTSPOT	

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
June 20, 2017						
BRUCHEY BUILDERS INC	7104 KEHNE RD	Not	N	-	NOT A HOTSPOT	-
CACTUS FLATS	10026 HANSONVILLE RD	Not	N	-	NOT A HOTSPOT	-
DOMINO'S PIZZA	4316 OLD NATIONAL PIKE #B	Not	N	-	NOT A HOTSPOT	-
EYLER'S SERVICE CTR	10002 ROCKY RIDGE RD	Not	N	-	NOT A HOTSPOT	-
FAT BOYS BAR & GRILL	10034 HANSONVILLE RD	-	-	-	-	Now: New Hope Community Seventh Day Adventist Church
LALLO'S PIZZA	12487 WOLFSVILLE RD	-	-	-	-	Now: Harne's Store (Convenience Store)
P & M TRANSMISSIONS INC	17040 SABILLASVILLE RD	Confirmed	Y	Poor outdoor material storage and vehicle operations practices	POTENTIAL HOTSPOT	-
SUBWAY	3000 VENTRIE COURT	Not	N	-	NOT A HOTSPOT	-
STONE FENCE GARDENS	6610 MOUNTAINDALE RD	-	-	-	-	PERMANENTLY CLOSED

5.3.4 Citizen and/or Agency Reporting

Information about how citizens can report illicit discharges is available online on Frederick County Government's Citizen Request Tracker web page under "Water Pollution Issues": http://www.frederickcountymd.gov/requesttracker.aspx

A reporting link is also available at: http://www.frederickcountymd.gov/index.aspx?NID=518

During the 2016–2017 reporting period, three potential illicit discharges were reported to the County through external reporting mechanisms. Detailed reports on two of the investigations are provided in Appendix D, as they were investigated with support from Versar, Inc. The remaining potential illicit discharge was investigated and resolved using OSER staff, MDE, and state agencies. Follow up documentation for County resolved investigations are included in Appendix E.

IDDE Report #1

County staff responded to a report of red floating material and discoloration in the water at a wet pond outfall at the Scott Key Center in Frederick. Versar's field staff investigated conditions at the site on October 13, 2016. During the investigation, field staff did not observe flowing water at the pipe and, thus, did not conduct a water quality test. A detailed report on this investigation is available in Appendix D.

IDDE Report #2

County staff responded to a report of constant discharge, accompanied by foam, coming from the Pleasant Walk Maintenance Facility's stormwater control system. Versar field staff assessed the conditions at the site on October 13, 2016, and found flowing water with obvious suds. Discharge analytical results showed no constituent concentrations above regulatory limits. A detailed report on this investigation is available in Appendix D.

IDDE Report #3

On January 17, 2017, the County received a complaint about an oil spill in Middletown, MD. The citizen noted that a cleanup effort was already conducted by a private firm. County staff from OSER and Highway Operations investigated the conditions described in the report. Results of the investigations found that sorbent material had been placed on the location of the spill and removed. It was determined that no further cleanup was required.

IDDE Report #4

In February 2017, the County received a citizen complaint about a milky water discharge entering Israel Creek, in Woodsboro, MD. County staff investigated the conditions described in the report, and notified staff with the Maryland Department of the Environment (MDE) of the initial findings and potential sources. MDE staff identified the source of the water to be the S. W. Barrick Quarry. The dewatering pumps had malfunctioned, and the company ceased pumping, but were unaware of the discharge to the stream. The quarry was fined by MDE's mining department as a result.

IDDE Report #5

The County received a complaint and photos from the Health Department noting vehicle washwater was discharging down the parking lot and around the building of Beckley's RV Camping Center. The complaint was forwarded to MDE as a result of the identification for the need of the state's General Permit for the Discharge of Exterior Vehicle Washwater to Groundwater from Commercial and Business-Related Vehicle Washing Operations (16-VW). A dual-agency inspection and visit was conducted to issue the permit application to the business.

IDDE Report #6

The County received a complaint regarding runoff across the parking lot of Hercules Iron Works and potentially into Glade Creek. The complainant explained that a pipe exiting the building was used to discharge acid washwater, was covered during construction; and that the business owners were trying to connect it to the sanitary sewer. The Division of Utilities and Solid Waste Management (DUSWM) was contacted to discuss the connection through their pretreatment program. An interdepartmental inspection was conducted with OSER's project manager and DUSWM's pretreatment specialist. The pipe in question had been covered upon the time of inspection. However, additional inspection results indicated that the business was power washing their metals, indoors on a grated pallet, with an acid and base mixture three times a week. In order to connect through the pretreatment program, the business was directed to disconnect their drainage pipe, collect samples, and perform lab testing to justify discharge into the sanitary sewer. Approval to connect to the sanitary sewer was ultimately granted after the presentation of various lab results and MSDS sheets to DUSWM.

IDDE Report #7

OSER received a complaint that muddy water was exiting a construction site at Lewisdale Road, Clarksburg, MD. The complaint was forwarded to the County's ECS for the Sediment and Erosion Control issue. The inspectors performed a site visit and grading activity controls were installed the following day.

IDDE Report #8

A complaint regarding a refrigerator being dumped into Ballenger Creek behind Kingfisher Court was forwarded to OSER by MDE. Investigations found the shell of a fridge in a stream and was reported back to MDE. The Health Department was notified by MDE that the refrigerator needed to be removed per their Nuisance Waste Ordinance, in which, the Health Department was able to have the Department of Parks and Recreation remove the refrigerator from the stream.

IDDE Report #9

MDE received a report for cooking oil leaking from a storage container near the Buffalo Wild Wings on Worthington Boulevard in Frederick, MD. The report was forwarded to OSER who inspected the site jointly with the Health Department's Food Services program. The investigation identified two uncovered 55-gallon drums of cooking grease behind the dumpster in the parking lot. The business was directed to cover and remove the drums. The drums were covered immediately, and removed thereafter and replaced with new, covered drums. Photos of the removal were provided for documentation to the Health Department and OSER. This case was also reported in the NRC database, seen in section 5.3.5 Spill Response (Table 2).

IDDE Report #10

A FedEx driver on route noted two 55-gallon drums leaking a red liquid on the side of Lime Kiln Road, and reported this to OSER. The County's Fire and Rescue team was notified due to the unidentified liquid report, and a team was dispatched for an investigation. The OSER project manager met the team on site where three 55-gallon drums were found and identified by the HazMat team as anti-freeze. Also on site was Frederick County's Sheriff Department who wrote an incident report for the case. Numerous bags of cat litter and absorbent were spread around the spill area by the HazMat team. MDE was notified of the incident by Frederick County Fire and Rescue, and subsequently oversaw remediation by dispatching personnel from the Baltimore office to remove and properly dispose of the 55-gallon drums. The incident report was received by the Sheriff's Office and is included in Appendix E. This case was also reported in the NRC database, seen in section 5.3.5 Spill Response (Table 2).

IDDE Report #11

Upon a hotspot survey of a Subway restaurant, OSER staff members found a 55-gallon drum filled with an oil or grease-like substance behind the office of Parkview Medical, which was located in the same plaza. Subway asserted that the drum was not theirs. Subsequently, OSER staff spoke with the front desk attendant of the medical facility, who also noted that it was not their drum. The property manager of the plaza at Matan Properties was contacted and directed to remove the oil drum using an environmental services and waste management organization. The drum was removed by ACV Enviro, and a copy of the invoice and bill of lading was provided to OSER for documentation. It is included in Appendix E.

5.3.5 Spill Response

In FY17, Frederick County continued to respond to all citizen complaints of illegal dumping and spills, as part of the County's overall Illicit Discharge Detection and Elimination program. OSER has developed a standard set of procedures that maintain consistency in reporting and referrals for minimal internal transfers, as part of the County's IDDE protocol. If a spill occurs within the MS4 boundary, and is not a hazardous material, sanitary sewer overflow, or septic system discharge, OSER will respond to the event and direct the property owner or responsible party on proper reporting and remediation measures. Follow-up inspections are conducted with varying timeframes based on the severity of the spill, documented internally, and reported to MDE, as necessary. Any spills reported to OSER are described above in section 5.3.5.

Hazardous spill calls are forwarded to 911, where first responders are trained and equipped to handle such situations. For hazardous spills requiring evacuation, the Department of Emergency Preparedness has updated its Emergency Operation Plan, which includes annexes for emergency evacuation; triggers, escalations and evacuation plans; and HazMat response. The County also has a reverse 911 system to perform targeted calling based on georeferenced locations for localized problems like hazardous spills. The Fire Department coordinates the Local Emergency Planning Committee, required under the Superfund Amendments and Reauthorization Act (SARA) Title III.

Spills are also reported to the National Response Center (NRC). OSER will only report spills to the NRC with the understanding that the responsible entity has not already done so or plans to do so. Records for Frederick County in FY17 are included in the table below (Table 2; USCG, 2017).

Table 2 - Reported Spills in Frederick County from 7/01/2016 - 6/30/2017

Date	Reported By	Address/Location	Material Spilled	Suspected Party	Notes/Comments
7/6/2016	National Response Center	Widespread, Frederick MD	Waste Oil	Private Citizen	Caller stated that the individual visits automotive type facilities and offers to dispose of used oil. The individual then drains the drums on the individual properties and then takes the drums to a recycling center for scrap metal.
10/19/2016	National Response Center	Brunswick Rail Yard, Brunswick, MD	Diesel Oil	CSX Railroad	2-3 gallons of diesel fuel discharged from a locomotive due to an unknown cause at this time. The locomotive was not part of a train.
1/2/2017	National Response Center	Route 15 at Mountville Rd, Frederick, MD	Unleaded automotive gasoline	Unknown	Caller is reporting that a vehicle fuel tank was damaged during an accident resulting in a spill of gasoline onto the road surface.
2/14/2017	National Response Center	Route 15 Northbound, West 7th Street Bridge, Frederick, MD	Diesel Oil, Engine Oil, Ethylene Glycol	Home Run, Inc.	Caller stated that a tractor trailer ran into a guard rail.
3/12/2017	National Response Center	9025 E. Baltimore Rd, Frederick, MD	Hydraulic Oil	Unknown	Caller is reporting a discharge of hydraulic fluid due to mechanical failure on a piece of heavy construction equipment. The impact is concrete floor.

Date	Reported By	Address/Location	Material Spilled	Suspected Party	Notes/Comments
4/19/2017	National Response Center	9532 Keys Chapel Rd, Union Bridge, MD	Raw Sewage	Unknown	Caller reported their neighbor is pumping their sewage tank into the culvert.
4/28/2017	National Response Center	RT 355 and RT 80, Urbana, MD	Edible Vegetable Oil	Buffalo Wild Wings	Caller is reporting that there are 55 gallons of used cooking oil behind the restaurant that are continuously leaking onto the ground and into a creek.
5/5/2017	National Response Center	800 block of Motter Ave, Frederick, MD	Diesel Oil	Frederick County Government (Transit)	A commuter bus was making a scheduled stop, when several citizens discovered that fuel was discharging from the fill cap (hose) on the bus. Approximately 10-20 gallons discharged, with an unknown amount into a nearby drain.
5/5/2017	National Response Center	On the Main Line, MP: BA70.8, Points of Rocks, MD	Unknown	Unknown	Caller stated a lead locomotive of a passenger train derailed after hitting a rock slide.
5/8/2017	National Response Center	Across from 4305 Lime Kilm Rd, Frederick, MD	Misc. Motor Oil, Ethylene Glycol	Unknown	A passerby observed three (3) 55 gallon drums in a vehicle pull-off area. The caller suspects that 2 or all of the drums leaked its content. 1 containing anti-freeze, another approximately 15 gallons of an unknown substance and the last suspected motor oil or hydrocarbons.

Date	Reported By	Address/Location	Material Spilled	Suspected Party	Notes/Comments
6/5/2017	National Response Center	I-70, South Mountain Rest Area, Myersville, MD	Diesel Oil	Unknown	Caller is reporting that a west bound tractor trailer struck debris in the roadway, rupturing both saddletanks. On-scene hazmat responders pumped 60 gallons of diesel from the tanks, but 140 gallons of material made it onto roadway and into a nearby stormdrain.

Source: (USCG, 2017)

5.3.6 Program Evaluation

Frederick County's Illicit Discharge Detection and Elimination program continues to put forth effort in identifying, eliminating, and documenting potential illicit discharges. The Office of Sustainability and Environmental Resources fulfilled its permit requirements for FY17: 158 dry weather screening inspections were conducted meeting the 100 outfall requirement, including 154 as part of the systematic screening, two as part of its triennial inspection program, and two as a result of the citizen reporting program; In addition to systematic screenings, ECS checked for illicit discharge at 437 triennial inspections. 19 businesses were screened through the visual surveys of parcels with industrial and commercial land uses; and 10 citizen reports of violation were investigated and eliminated.

Data for 2017 pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase with 160 records representing 158 initial screenings and two retest screenings. Additionally, 437 triennial inspection IDDE screenings from 2017 are included.

5.4 Litter and Floatables Annual Report

Frederick County recognizes that increases in litter discharges to receiving watersheds have become a growing concern within Maryland. The County has evaluated current litter control programs, potential sources, and methods for elimination and opportunities for improvement. The County also has enhanced its public outreach program to address Litter and Floatables issues.

5.4.1 Potential Sources

An Assessment of Potential Sources was completed for the 2015 half-year Annual Report. An assessment of data from several sources, to include Stream Corridor Assessments (SCA); restoration monitoring; and the Frederick County Stream Survey, determined that trash problems are not present along the entire lengths of stream networks in Frederick County, but instead may be attributed to trash "hotspots," or dumping sites since the problems are present in isolated locations. The dumping sites that received a

severe trash rating in the SCA were located within agricultural, resource conservation, low density residential, and village center land use types.

5.4.2 Methods for Elimination

Based on the 2015 Assessment of Potential Sources, OSER staff use the following strategies as methods to eliminate litter and floatables throughout Frederick County's MS4.

- Public Outreach Program
- Litter Control Programs

5.4.3 Public Outreach Program

In order to address litter control problems and develop a litter and floatables public education and outreach program in Frederick County, OSER is following the goals and objectives from The Strategic Plan to Improve Water Quality through Public Outreach in Frederick County, Maryland, published in November 2003. As part of litter prevention outreach, OSER staff is working with and supporting organizations that provide outreach and coordinate large and small-scale cleanups in Frederick County.

Developed in 2015, Frederick County's litter and floatables public education and outreach program includes the dissemination of outreach materials to the public that communicate the level of trash in Frederick County's streams, discourage littering behavior, and encourage individuals or groups to participate in trash cleanups. OSER staff developed materials specific to Frederick County and has incorporated additional litter prevention outreach materials into current outreach efforts required under the public education section of the permit (PART IV.D.6). Additional education and outreach are being implemented through print and digital media, advertisements, press releases, newsletter articles, and a resource webpage with the promotion of local trash cleanup events to encourage public participation. OSER staff has developed an online webpage at https://frederickcountymd.gov/5375/Watershed-Cleanup-Events-and-Resources to be used as a resource for promoting participation in existing trash cleanup events and coordination of new cleanups, and for educating the public on litter prevention in Frederick County. The webpage includes links to the websites of other organizations who host cleanup events, such as the Alice Ferguson Foundation.

The Alice Ferguson Foundation (AFF) has developed a Regional Litter Prevention Campaign toolkit as part of their Trash Free Potomac Watershed Initiative. The Regional Litter Prevention Campaign toolkit contains resources available for Frederick County to use for the County's public education and outreach program. The toolkit materials include advertisements and visuals, communication pieces, and community outreach pieces. OSER staff uses materials from the AFF toolkit that are appropriate for Frederick County's outreach efforts to reduce littering. OSER staff wrote a grant application to the Chesapeake Bay Trust for funding to create a Green Leader Brigade that would train volunteers to plan and implement simple environmental restoration activities, such as cleanups. In addition to the work AFF is doing with other organizations in Frederick County, OSER partnered with AFF to conduct a Green Leader Brigade training and cleanup in Spring 2017.

The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are eleven (11) actions that educate and motivate Challenge participants to eliminate waste and litter, recycle, and compost. To date, nearly 2,094 individuals have registered with the overall Green Homes Challenge and 280 are self-certified as Green Leaders.

The Frederick County Department of Solid Waste Management coordinates a recycling education and outreach program that promotes recycling through community engagement, print and digital media, school presentations, and special events. The County has an overall recycling and waste diversion rate of 51.21% (MDE's County Recycling Rates by Commodity in Tons for Calendar Year 2015 from http://mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/SiteAssets/Pages/recylingrates/County%20and%20State%20Recycling%20Rates%20CY%202015.pdf) – one of the higher diversion rates in the state – and has established a goal of achieving a 60% waste diversion rate by 2025. Four times per year Frederick County's Department of Solid Waste Management sends out useful information on the county's recycling program, including important updates, interesting facts and tips for creating less waste. The Department of Solid Waste Management has information available on its website http://www.frederickcountymd.gov/5634/Waste-Management-Trash-and-Recycling for County residents on various landfill programs, such as disposal of household hazardous wastes, recycling, source reduction, and backyard composting. The continuation of current efforts in this program will be sufficient in meeting the permit requirements for recycling education and outreach and achieving the county recycling goals.

Recycling Outreach (conducted by the Recycling Outreach Program Coordinator under the Frederick County Department of Solid Waste Management) is ongoing and includes:

- Community Engagement: meet with community groups and provide speaking/presentations; present displays at public events
- Digital Media: Facebook; e-newsletter; mobile app (MyWaste)
- Print Media: direct mail; newspaper and other advertising media (bus, billboard, etc.); press releases; articles for publications
- Schools: work directly with Frederick County Public Schools (FCPS) to increase awareness among staff and students of waste and recycling issues; include private and home schools in any contests or promotions
- Special Events: conduct contests, drop-off events, award programs and other campaigns to bring attention to and increase support of County programs and goals

The Board of County Commissioners of Frederick County, Maryland signed the Potomac Watershed Trash Treaty in February 2006.

Frederick County pledged to implement trash reduction strategies and to increase education and awareness of the trash issue throughout the Potomac Watershed in efforts to achieve a trash free Potomac by 2013.

The first phase of the Solid Waste Management Options Study was initiated to develop a long-term solid waste management strategy that is informed by and inclusive of county residents. Frederick County's Solid Waste Steering Committee held a series of workshops between November 2015 and February 2016 collectively called the "What's Next? Solid Waste Public Forums". The framework for evaluating the options generated by the public was built around criteria in the Maryland Recycling Act and Zero Waste Plan. Options recommended for analysis in phase 2 of the study include:

- Waste reduction program at county schools – Collecting food waste for composting, increasing recycling efforts, etc.
- Three-bin system for collection – waste collection would separate trash, recycling, and food waste.
- Food waste collection from restaurants – Commercial food waste would be collected for composting.
- Community-scale, decentralized composting program – Food waste and other organic material would be collected for composting at small facilities. This could serve as a pilot for a large-scale operation.
- Development of a large-scale, centralized composting facility – A central countywide facility would process separated organic materials: primarily food waste, yard waste, and non-recyclable paper.

During Phase 2 of the study, a detailed analysis was completed of the viability of each recommended option from Phase 1, both individually and in combination with other appropriate options. The Phase 2 Report was completed (issued) June 30, 2017. Prior to completion, the Phase 2 Report was presented at a County Executive Town Hall meeting on June 2, 2017 and to County Council on June 27, 2017. Findings from the Phase 2 report will serve as a roadmap for the county to achieve recycling and waste diversion goals over the next ten years.

5.4.4 Litter Control Programs

The following litter control programs throughout Frederick County are presented below.

- Potomac River Watershed Cleanup (PRWC) - April 22, 2017
  - The event is an annual watershed-wide effort to clean up trash along the Potomac River. Partners include the Alice Ferguson Foundation and Frederick County Government. A local cleanup was organized by the Green Leader Brigade to clean up trash along the Ballenger Creek Trail.
- Frederick County "Adopt-a-Road" Program - **Ongoing**
  - The Office of Highway Operations coordinates an "Adopt-a-Road" Program to help control litter along County roads. Approximately 93.72 miles of road are maintained by 42 groups across the County. From July 2016 through June 2017, a total of 5.11 tons of trash and 6 tires were removed through this program.
- Road Maintenance Activities - **Ongoing**
  - The Office of Highway Operations removed a total of 35.26 tons of trash and 395 tires from July 2016 through June 2017. The Office of Highway Operations also conducts street sweeping and inlet cleaning.
- Frederick County Health Department Nuisance Waste Ordinance – **Ongoing**

- According to the nuisance waste ordinance, Frederick County's Health Department enforces illegal dumping that is reported by OSER's IDDE program protocol. OSER tracked the removal of one illegal dumping complaint this reporting period as included in IDDE Report #8 (Section 5.3.4).

5.5 Property Management and Maintenance

There are eleven (11) Frederick county-owned and operated facilities that are currently covered by the 12-SW General Permit for Discharges from Stormwater Associated with Industrial Activities (Table 3). All eleven facilities currently have Stormwater Pollution Prevention Plans (SWPPPs) that are continuously updated by SWPPP team members through redline edits. The identified SWPPP team members also perform quarterly inspections, and visually monitor the outfalls associated with the BMP's property. Annual trainings occurred in October and November 2017. Spills are reported and documented internally and MDE is notified as required. Maryland Environmental Service has been contracted to assist, as necessary, with spill response and other 12-SW related tasks.

Table 3 - Notice of Intents (NOIs) with Permit Coverage through December 31, 2018

Facility Name	Permit Number	NOI Submitted	SWPPP Developed	SWPPP Complete	SWPPP Inspections Complete
Jefferson Copperfield Wastewater Treatment Plant	12SW2283	Yes	Yes	Yes	Yes
Ballenger McKinney Wastewater Treatment Plant	12SW1878	Yes	Yes	Yes	Yes
Reich's Ford Landfill	12SW2366	Yes	Yes	Yes	Yes
331 Montevue Lane (Frederick) Highway Operations Yard	12SW1890	Yes	Yes	Yes	Yes
Thurmont Highway Operations Yard	12SW1892	Yes	Yes	Yes	Yes
Johnsville Highway Operations Yard	12SW1891	Yes	Yes	Yes	Yes
Myersville Highway Operations Yard	12SW2285	Yes	Yes	Yes	Yes
Jefferson Highway Operations Yard	12SW2291	Yes	Yes	Yes	Yes
Urbana Highway Operations Yard	12SW1893	Yes	Yes	Yes	Yes
Law Enforcement Center	12SW1942	Yes	Yes	Yes	Yes
Transit	12SW1888	Yes	Yes	Yes	Yes

This Annual Report contains the training information from FY17, as well as annual and quarterly inspections, annual training sign-ins, spill response forms, and other relevant data (Appendix G).

Data in relation to industrial facilities managed for stormwater can be found in the MunicipalFacilities feature class in the MDE_NPDES_MS4 geodatabase.

5.5.1 Road Maintenance Activities

During FY17, Frederick County continued to implement recommendations from its 2002 Assessment of Road Maintenance Activities (Versar, 2002). The objective of this study was to assess the effects of road maintenance activities on stormwater runoff and resulting impacts on surface water quality. The assessment evaluated current practices, analyzed alternative practices, and presented a plan to incorporate alternative practices into the County's road maintenance programs. Members of the County's Office of Highway Operations provided data and information on current practices and plans of the Department. Activities included in the evaluation were chemical usage in snow and ice removal, herbicide spraying for vegetation control, street sweeping, litter control, road surface maintenance, and maintenance of unpaved surfaces. The assessment report was submitted to MDE on June 11, 2002 and was found to meet NPDES permit requirements for developing a plan to reduce pollutants associated with road maintenance activities.

The County continues to move ahead with several of the recommendations developed in the June 2002 evaluation report. The County has migrated all required data from Office of Highway Operations quarterly reports for FY17 into the MDE's geodatabase or tables found within the Annual Report. This addresses MDE's October 31, 2017 comment mentioning inconsistencies. The activities that the County Office of Highway Operations undertook during the reporting timeframe of 7/1/16 through 6/30/17 to reduce runoff pollution were:

1. Street Sweeping: Street sweeping was conducted July 2016 through June of 2017. A total of 352.58 acres (484.8 miles) of road were swept and 221.97 cubic yards' material totaling 103 tons were removed from roads in Frederick County during FY17. The County is currently evaluating MDE's request in the Annual Report review that the County develop a written SOP or other document that provides a policy on how roadways are specifically identified as candidates for sweeping. All curbed roads are swept at least once a year with some roads up to four times a year. All sweeping is conducted using a vacuum assisted truck. Frederick County prioritizes closed section main roads to be swept first followed by roads in developments. Once all sections are swept, the sweeping starts over with closed section main roads, etc. Complaints also drive prioritizations. In addition to complaint-driven sweeping, highway operations proactively sweep bridge decks and other areas after deicing activities. When the Office of Highway Operations receives a complaint, the complaint is logged into a work order system and assigned to a foreman, and work is performed. Citizens either directly input complaints into the system through a link on the County's Highway Operations Department website; or, the Office of Highway Operations secretary receives calls and enters information into the work order request system. Street

sweeping data is recorded by the districts, and Lane Miles, Cubic Yards, Landfill Fee, and Landfill Weight are all captured along with which watershed the sweeping activities occurred. Specific weight information by watershed is available from October 2015-present while quarterly weight totals can be derived since January of 2015.

2. Deicing: Caliber M1000, which is a 30% Magnesium Chloride solution with an agricultural by-product, is used in 48 of the County's trucks when the temperature is ≤ 25 ºF. The trucks are equipped with tanks that range from 90-120 gallons that apply the solution onto the salt mixture as it is spread onto the road. Overall, the County has 51 full-sized, ten-ton dump trucks and 14 smaller, one-ton dump trucks for deicing. The Caliber M1000 makes the salt mix more effective and reduces corrosion. The County does not use M1000 for de-icing at temperatures above 25 ºF. The M1000 is also sprayed onto the salt to pre-treat the roads, if the timing and conditions warrant.

   According to product literature for Caliber M1000 (http://www.innovativecompany.com /products/winter /liquid-enhanced-liquid/caliber-m1000):

   "As a pre-wetting agent for salt and sand, Caliber M1000 reduces bounce and scatter, increases the speed at which the salt begins working, increases the melting capacity of the salt, and permits the use of salt at lower temperatures. Additionally, Caliber M1000 also reduces corrosion, inhibits crystal formation and product fallout at lower temperatures, and improves roadway traction when compared to other liquid products."

   Additional information on Caliber M1000 is also available at: http://www.innovative company.com/userfiles/file/sell_sheets/Caliber_M1000_Brochure.pdf.

   The use of deicers in FY17, by DNR watershed, is presented in **Error! Reference source not found.** for the Highway Operations. A total of 1,340 gallons of liquid deicer (Caliber M1000), 12,054 American standard tons of salt (consisting of over 98.5% sodium chloride by weight), and 178 American standard tons of anti-skid were used within the watersheds. Highway Operations also records the amount of salt used for other County departments, and the summary is shown in Table 5 - Miscellaneous Tons of Salt Used by Other County Departments. An additional 445 tons of salt was used at other departments within the County. Prior to 2009, Highway Operations used cinders instead of anti-skid. The switch to anti-skid was the result of the suspension of distribution of bottom ash for winter road treatment in order to conform to the Maryland Coal Combustion Byproducts (CCB) regulations. These regulations prohibit placement of CCBs in areas other than approved disposal facilities. As a result, Highway Operations began using an anti-skid material purchased from local quarries. It is a small, uniform size stone that contains very little dust/fine material. Thus far, the material has been working well. Starting in December 2008, one of the objectives of Highway Operations was to use more liquid deicer in an attempt to use less salt. They are also pre-treating the roads, whenever appropriate, to apply material under the snow/ sleet / ice layer so that frozen precipitation cannot bond to the road, which should result in a

significant reduction in materials used. In addition, Highway Operations developed and implemented a Salt Management Plan to provide a framework to deliver safe, efficient roadway systems during winter storm events in a cost effective and environmentally sensitive manner.

In its review of the 2016 Annual Report, MDE, "requests that the County provide an assessment of how de-icing procedures are reducing the application of salt during winter weather." Frederick County responded in 2016 to a similar request and had examined whether the use of deicer (Caliber M1000) reduced the amount of road salt used during snow events. There did not seem to be a clear pattern in the use of these two techniques over time, in relation to the total amount of snowfall recorded in the County for the year. Additionally Caliber was quite expensive. The County will continue to evaluate effectiveness of deicing materials and look at additional variables such as: temperature, number of snowfall events, pretreatment events, and length of time the snow lays on the ground. For the last storms of FY17, the county installed a new salt brine-producing unit and had equipped a truck to pilot the technology. The county found that pretreatment with the brine allowed the county to use significantly less granular salt. The County invested significantly in this equipment after the end of FY17. In FY18, the County anticipates reduced salt application by applying salt brine as pre-treatment to reduce the need for granular salt. Next year's Annual Report will discuss this in more detail.

3. Inlet Cleaning: All Highway Operations foremen began reporting inlet-cleaning statistics in 2004. A total of 508 inlets were cleaned in Fiscal Year 2017. In addition, 89 inlets were vactored. Inlet-cleaning statistics are reported in the quarterly reports under Drainage. Prioritization of inlet/pipes cleaned by the County are complaint-driven, using the same mechanism to report issues as street sweeping noted above. The County is currently evaluating MDE's request in the Annual Report review that the County develop a written SOP or other document that provides a policy on how inlets are specifically identified as candidates for cleaning.

4. Data Collection: Reports were collected quarterly from district foremen and submitted to the department head. At the end of 2009, data collection improvements were made to better track application of snow removal materials as discussed above under "Deicing".

5. Reducing the Use of Pesticides, Herbicides, Fertilizers and Other Pollutants: The 2002 road maintenance assessment report presented data on two herbicides, Razor and Pendulum, which were used by the County's Office of Highway Operations in 2001. Pendulum, with 37.4% pendamethalin as the active ingredient, was noted to be an environmentally unfriendly chemical with potential impacts to aquatic life. The report recommended that the County review its use and consider alternative treatments. As reported in the 2003 Pesticide/ Herbicide report (Versar, 2003) and subsequent NPDES Annual Reports (see Section 5.5.2), the use of Pendulum has been discontinued. In 2015, Ranger Pro (a generic version of Roundup), DMA 4 IVM, and CWC-90 (a non-ionic surfactant) were used for weed control by the Office of Highway Operations. In FY17, the Office of Highway Operations sprayed 10,105 gallons (diluted quantity) of herbicide along approximately 143 miles of road guardrails in the County.

Evaluation: The County's Office of Highways and Transportation continues to implement the recommendations of the Road Maintenance Report and to experiment with new technology to reduce its activities' impacts on water quality.

Data in relation to chemical application from Highway Operations can be found in the ChemicalApplication table in the MDE_NPDES_MS4 geodatabase.

Table 4 - Frederick County Office of Highway Operations Use of Deicers, by Watershed, 07/01/2016 through 06/30/2017. Liquid Used is Caliber M1000.

Snow Removal Materials Used from 7/1/2016 through 6/30/2017															
Month	Catoctin Creek			Double Pipe Creek			Lower Monocacy			Potomac			Upper Monocacy		
	Gallons	Tons		Gallons	Tons		Gallons	Tons		Gallons	Tons		Gallons	Tons	
	Liquid	Salt	Anti-Skid	Liquid	Salt	Anti-Skid	Liquid	Salt	Anti-Skid	Liquid	Salt	Anti-Skid	Liquid	Salt	Anti-Skid
December 2016	170	1,116	21		158	4	330	1,348	0		124	0		1,257	24
January 2017	50	1,342	34		208	12	100	1,310	35		96	0	360	1,485	48
February 2017		215	0		48	0	30	173	0		5	0	80	273	0
March 2017	60	868	0		123	0		890	0		111	0	160	910	0
Total	**280**	**3,540**	**55**	**0**	**535**	**16**	**460**	**3,720**	**35**	**0**	**335**	**0**	**600**	**3,924**	**72**

Table 5 - Miscellaneous Tons of Salt Used by Other County Departments

Month	Parks	W&S	Landfill	Westwinds	Eaglehead	Coldstream	Frederick City	FCC	Woodsboro	Myersville
Nov-16	0	0	40	60	0	200	0	0	0	0
Dec-16	58.5	13	0	0	0	0	0	4.5	0	0
Jan-17	34	0	0	0	0	0	0	0	0	0
Feb-17	0	0	0	0	0	0	0	0	0	0
Mar-17	15	16	0	0	0	0	0	4	0	0
Total	**107.5**	**29**	**40**	**60**	**0**	**200**	**0**	**8.5**	**0**	**0**

5.5.2 Herbicides, Pesticides, Fertilizers

Because of concern for environmental health, MDE, through the requirements of NPDES MS4 Permits, requires local jurisdictions to evaluate their current uses of pesticides, herbicides, and fertilizers and to seek opportunities to reduce use of these materials. To address this requirement, during 2002-2003, Frederick County sponsored a study to characterize uses of pesticides, herbicides, and fertilizers by County agencies and to identify potential reduction strategies - *Recommendations for Alternatives to Pesticide/Herbicide/Fertilizer Use for Frederick County, December 17, 2003* (Versar, 2003).

Frederick County initiated this study in fall 2002 by surveying County divisions about pesticide, herbicide, and fertilizer use at all County-owned facilities and by all Frederick County Government agencies or departments. At the time, four County units were found to apply herbicides, pesticides, and/or fertilizers: (1) the Maryland Department of Agriculture's (MDA) Vector Control Program, which works in conjunction with the Frederick County Mosquito Control Program, (2) the Division of Parks and Recreation, (3) Frederick County's Office of Highway Operations, and (4) the Frederick County Weed Control Program.

Study results indicated that pesticide/herbicide/fertilizer use by Frederick County did not require any drastic reduction in application practices because County agencies had, in general, already minimized use of these chemicals, or were already using more environmentally acceptable substitutes. In most cases, the overall recommendation was to continue current chemical control practices, while considering possible biological and mechanical controls that could be used in place of, or in combination with, current practices.

A number of practices are already employed by County personnel to control the application of chemicals and, where possible, to use minimal amounts. Frederick County departments apply pesticides on an "as needed" basis. Any pesticide usage is documented in Appendix H. Fertilizer is applied one to three times per year at specific locations. Most of the departments surveyed indicated specifically that application rates were based on label instructions and were made at the lowest rate required for effectiveness.

Herbicide Use

Frederick County Weed Control Program, Frederick County's Division of Parks and Recreation, and Frederick County's Office of Highway Operations continue to monitor weather conditions around the time of application; applications are not performed if heavy rain is expected within 2 hours of application. The Weed Control Program continues to verify that application personnel are registered with the Maryland Department of Agriculture (MDA) Pesticide Regulation Section and are either licensed applicators or work directly under the supervision of one.

As noted in the Road Maintenance Activities section (Section 5.5.1), Frederick County Highway Operations has discontinued the use of the herbicide Pendulum, which is toxic to aquatic life, and has replaced its use of Razor with more environmentally friendly herbicides, which included Ranger Pro (a generic version of Roundup), DMA 4 IVM, and CWC-90 (a non-ionic surfactant) in 2015.

Location of Herbicide, Pesticide, and Fertilizer Application

MDE commented in its October 31, 2017 Annual Report review that specific location information for herbicide, pesticide, and fertilizer application was lacking from the Annual Report. The County researched this question as best as possible given the time frame, and is able to provide some documentation pertaining to location.

In regards to Frederick County Weed Control herbicide application, location information is provided in individual spraying reports, provided in Appendix H. Frederick County weed control sprayed 3,240 gallons of diluted Transline and 1,155 gallons of diluted Round-Up Pro. The totals of these activities are reflected in the MDE geodatabase table ChemicalApplication. In the case of Highway Operations guardrail herbicide application, the County tracks application by highway district. GIS analysis was used to estimate gallons by watershed within each district. The map in Figure 4 shows the boundaries of highway districts and watersheds within the County. Table 6 is the result of GIS analysis estimating the number of gallons applied per watershed based on County right-of-way (ROW) within each highway district and watershed.

Figure 4 - Highway Districts in Relation to Watershed Boundaries.

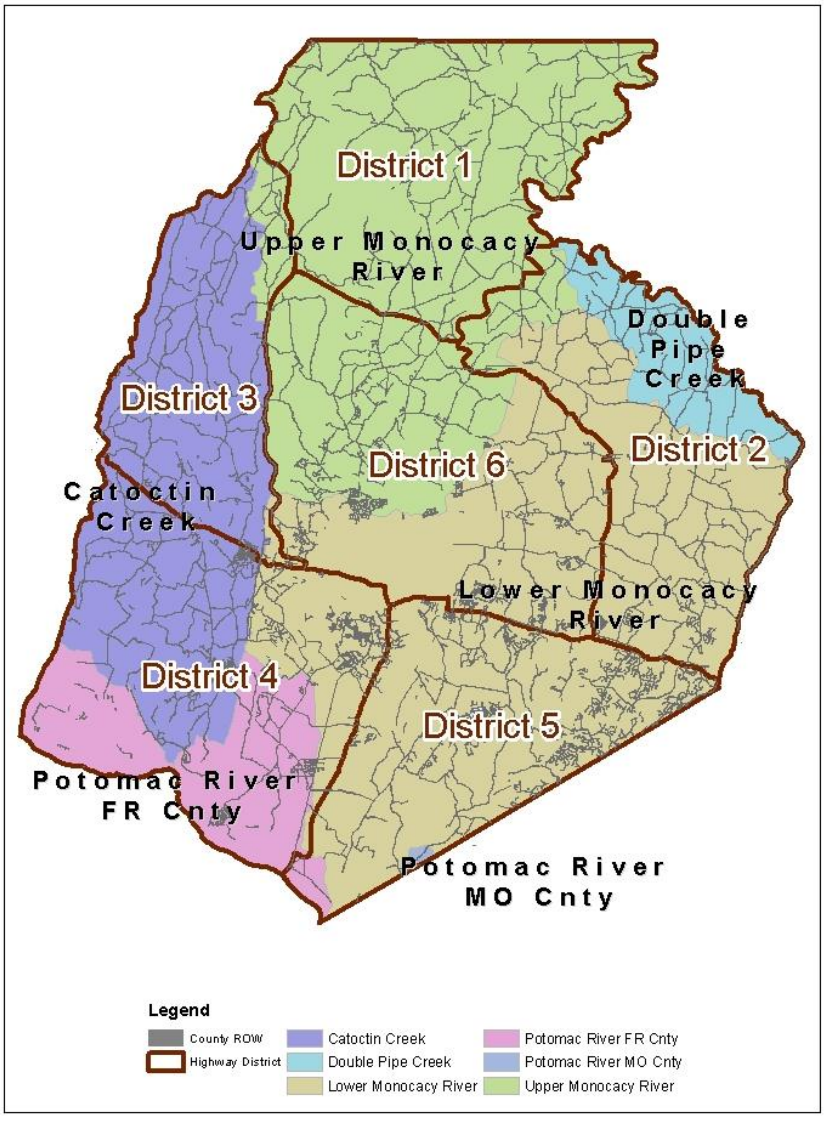


Table 6 - Highway Operations Estimated Gallons of Diluted Ranger Pro Applied Within Each Watershed.

Watershed	Estimated Gallons per Watershed
Catoctin Creek	1,416
Double Pipe Creek	374
Lower Monocacy River	5,091
Potomac River FR Cnty	528
Potomac River MO Cnty	22
Upper Monocacy River	2,674
Grand Total	10,105

Currently, Herbicide, fertilizer, and pesticide data collected by Parks and Recreation is unable to be reported with locations. The County will work to improve data collection amongst various departments to improve reporting of herbicide, pesticide, and fertilizer applications.

All Herbicide, pesticide, and fertilizer use by County Department from 7/1/16 through 6/30/17, is presented in Appendix H, and data in relation to chemical application, along with historical application, can be found in the ChemicalApplication table in the MDE_NPDES_MS4 geodatabase.

5.6 Public Outreach and Education Program

In FY17, OSER staff continued to make impacts through the County's public outreach and education program. Frederick County addressed permit-suggested outreach topics and met its own goals and objectives from *The Strategic Plan to Improve Water Quality through Public Outreach in Frederick County, Maryland*, published in November 2003. Outreach activities are used to educate citizens, to direct the course of watershed plans, and to identify landowners for potential restoration activities. OSER enhanced its outreach materials as well as its efforts to provide its citizens with needed educational touchpoints.

Key outreach efforts discussed in greater detail in the section below include:

- Outreach related to the Monocacy & Catoctin Watershed Alliance (MCWA) and Green Leader Brigade;
- Outreach related to the Green Homes Challenge (GHC), and;
- Other County Outreach Initiatives.

The results of the County's outreach efforts can be seen in the following sections and in the summary of public outreach and education activities in Table 7.

Table 7 - Summary of Public Outreach and Education Activities of FY17

Type	Date(s)	Description
Increasing Water Conservation		
Monocacy and Catoctin Watershed Alliance Web Page	Ongoing	The Alliance webpage (watershed-alliance.frederickcountymd.gov) links to the County webpage and features information for citizens on stormwater outreach topics.
Storm Drain Stenciling Project	5/13/17	OSER staff completed a storm drain stenciling project in the Ballenger Creek area and provided outreach materials to residents on storm drains and water pollution.
Rain Barrel Promotion	Ongoing	The Scott Key Center, a division of the Frederick County Health Department, offered water-saving Rainwater Collection Systems. Developmentally disabled clients at the Scott Key Center convert recycled olive barrels into rain barrels and make them available for purchase to Frederick County residents. Rain Barrels are available for some county residents through the grant- funded Expanded Neighborhood Green Program.
Commercial Property Assessed Clean Energy (C-PACE) Loan program		The Frederick County Council passed bill number 16-17 on November 15, 2016 to enable Frederick County to create a PACE program. The bill lists "Water conservation devices not required by law" as an eligible practice. Staff worked on this program throughout the fiscal year. See https://www.fredericknewspost.com/news/environment/county-businesses-get-new-method-to-finance-energy-saving-technologies/article_92e21fb0-0b4c-5dfc-865d-ed069f59c5b9.html and https://www.fredericknewspost.com/news/environment/sustainable-frederick-frederick-county-considers-pace-program/article_b2679e5b-803c-5993-bc8a-b89845806351.html.
Residential and Community Stormwater Management Facility Implementation and Maintenance		
Community Meeting – Point of Rocks Stream Restoration and Stormwater Pond Project	1/10/17	Staff presented and obtain public input on the 30% design plans which includes stream restoration as well as a stormwater retrofit. Article on 1/12/17 about the meeting: https://www.fredericknewspost.com/news/economy_and_business/real_estate_and_development/point-of-rocks-backyards-are-washing-away/article_70ac9a2a-3c97-553a-b111-9c1a32b4df8b.html.
Point of Rocks Neighborhood Stream Restoration and Pond Retrofit	Ongoing	A stream restoration and pond retrofit was initiated as a result of the Point of Rocks Comprehensive Stormwater Master Plan. As of June 2017, 60% design is completed.
Neighborhood Green residential stormwater restoration program	2/28/17	Staff worked with the Frederick News-Post on an article about the County's Neighborhood Green Program that installs stormwater practices on residential properties: https://www.fredericknewspost.com/news/environment/county-homeowners-can-get-money-to-ease-backyard-water-pollution/article_e65d76b8-0d43-5d02-8517-2b9280bbe5db.html
Frederick County Master Gardeners Presentation	4/11/17	Staff presented an educational stormwater management seminar on introduction to stormwater management and how the Master Gardeners could assist. Staff also provided a snapshot of stormwater management practices that are ongoing throughout the County.

Type	Date(s)	Description
Ballenger Community Civic Association	4/23/17	OSER staff spoke to members about general stormwater management.
Stormwater Management Areas	5/4/17	Staff wrote a Sustainable Frederick Column for the Frederick News-Post on the changing face of stormwater management areas: https://www.fredericknewspost.com/news/environment/sustainable-frederick-the-changing-face-of-stormwater-management-areas/article_e3ec6fce-afe2-593c-a51b-942aa0230b89.html
Delauter Road retrofit for Brook Trout Passage	1/18/17 and 6/15/17	Articles in Frederick News-Post about Delauter Road project, brook trout passage: https://www.fredericknewspost.com/news/environment/fish-crossing-delauter-road-closed-for-repairs-to-brook-trout/article_40d4dd44-cab4-5cd5-ae84-f9bbc217b61a.html and https://www.fredericknewspost.com/news/environment/where-just-keep-swimming-is-not-an-option/article_325e0114-d197-57b3-9523-d93ab9e57707.html.
Restoration project virtual tour	Ongoing	Restoration project virtual tour is at www.frederickcountymd.gov/6612/69701/Community-Restoration.
Chesapeake Conservation Corps	Ongoing	Frederick County Government hosts Chesapeake Conservation Corps members and works with these recent graduates to learn about stormwater programs. The Corps members help with outreach efforts throughout the year. http://www.fredericknewspost.com/news/environment/volunteers-help-county-office-sort-out-stormwater-issues/article_160db9ca-3f72-5703-b579-f27ca1e9c746.html
FCSC "Green Your Scene" Workshop	10/28/16	Staff helped the Sustainability Commission plan this workshop for community organizations, businesses, teachers, administrators, parents and students to learn more about employing sustainable environmental practices including stormwater. See https://www.fredericknewspost.com/news/environment/green-your-scene/article_4950b7f0-457f-51c0-a6a7-29583d042c2e.html.
Green Leader Brigade Program	3/18/17	Staff worked with the Frederick News-Post on articles about the launch of the Green Leader Brigade volunteer program: https://www.fredericknewspost.com/news/environment/calling-environmental-stewards-frederick-county-launches-green-leader-training-program/article_7d10b90c-1d52-50ac-b861-d24ef9e6acff.html

Type	Date(s)	Description
Creek ReLeaf Program	4/18/17, 5/11/17 and 6/22/17	Staff worked with the Frederick News-Post on articles about the County Creek ReLeaf Program: https://www.fredericknewspost.com/news/environment/frederick-county-to-tackle-urban-stormwater-runoff-with-trees/article_024f1718-087d-5e96-887b-ec2d3d89a140.html https://www.fredericknewspost.com/news/environment/applications-open-for-reforestation-program/article_b69ada56-5142-5752-b324-b3d088045bad.html https://www.fredericknewspost.com/news/environment/deep-roots-high-hopes-in-first-year-of-frederick-county/article_9d822031-396f-5251-8aac-ae275d9e061a.html
Green Leader Tip Sheets	Ongoing	OSER publishes tip sheets on stormwater and clean water –related topics that include "Composting-Do the Rot Thing", "Gardening with Native Plants", "Natural Household Cleaners", "Maintaining your Lawn While Protecting Water Quality", "Harvesting Rainwater Using Rain Barrels", "Design and Construction of a Rain Garden", available at https://www.frederickcountymd.gov/7508/Homeowner-Tip-Sheets.
SW Maintenance Fact Sheets	Ongoing	With design templates from Charles County, OSER published fact sheets on property maintenance of stormwater best management practices, to include: "Guidance for Maintaining Dry Wells", "Guidance for Maintaining Rain Garden, Bioswale, and Micro-Bioretention Facilities", "Guidance for Maintaining Porous Pavement", and "Guidance for Maintaining Stormwater Management Ponds", available at https://www.frederickcountymd.gov/7508/Homeowner-Tip-Sheets.
Watershed Study Public Comment Period for various Watershed Restoration Assessments	10/7/17 - 11/27/17	OSER provided 30 day public comment period for the following assessments: Upper Monocacy Watershed Assessment, Lower Monocacy Watershed Assessment, Ballenger Creek Stormwater Master Plan, Little Hunting Creek Watershed Assessment and Restoration Concept Report, County-owned Stormwater Management Best Practices Retrofit Assessment, and Point of Rocks Storm Drain Analysis.
Residential Car Care and Washing		
Car Free Day	9/22/16	County TransIT Services Division promoted Car Free day and outreach about alternative transportation. See https://www.frederickcountymd.gov/documentcenter/view/292232.
Proper Erosion and Sediment Control Practices		
Backyard Buffers Program	March-April 2017	Maryland Forest Service, an Alliance partner, worked with the County to conduct outreach that provides free trees to homeowners with frontage on unbuffered streams. The program distributed 89 tree bundles (containing 25 seedlings each) to Frederick County households.
Woody Vegetation Control Methods Handout	Ongoing	County SWM inspection staff routinely hand out a one-page fact sheet, "Woody Vegetation Control Methods: Guidelines for Stormwater Facilities", to homeowner associations, property management groups, developers, and others responsible for maintaining stormwater management facilities.

Type	Date(s)	Description
Inspection Program	Ongoing	Stormwater Management Facility inspections are conducted triennially with explicit direction for maintenance/correction when problems are discovered.
Improving Lawn Care and Landscape Management		
In the Street	9/10/16	OSER staff attended this annual outreach event and promoted the Neighborhood Green Program and provided tip sheets on lawn care management and stormwater best management practices. We also promoted the Green Leader Challenge.
Road Salt	12/22/16	Staff wrote a Sustainable Frederick Column for the Frederick News-Post on road salt. https://www.fredericknewspost.com/news/environment/sustainable-frederick-salt-in-the-water/article_946fb3c4-f250-560a-a8cb-58c833330eef.html
Urbana Senior Presentation	9/15/16	OSER staff gave a presentation on "Tools, Incentives and Programs to Go Green".
Neighborhood Green Program Workshop at Thurmont Library	2/4/17	This workshop provided information on the expanded Neighborhood Green Program and ways to control stormwater runoff on residential properties by installing best management practices like rain gardens, rain barrels, conservation landscaping and tree planting.
Frederick County Home Show	3/19-3/20/17	OSER hosted a booth at this 2-day event with the objective of informing County residents about the Neighborhood Green and Green Homes Challenge programs. Table hosts informed 165 visitors about these programs and provided lawn care and landscape best management practices information through our Green Leader Tip Sheets.
Brunswick Elementary STEM Night	3/29/17	OSER gave a presentation and hosted a booth at the Brunswick Elementary STEM night about the Green Homes Challenge.
MOM'S Organic Market Tabling	3/29/17	OSER staff hosted a table at Mom's Organic Market to promote green programs to customers.
Storm Drain Stenciling Workshop Urbana Library	4/5/17	OSER hosted a Storm Drain Stenciling Workshop as part of the Green Leader Brigade Volunteer Corps outreach for citizens interested in learning how to lead their own storm drain stenciling event.
Green Walls Garden Club	4/12/17	OSER staff gave a presentation to members of the Green Walls Garden Club on the Green Leader Challenge within the Green Homes Challenge.
AstraZeneca Earth Day Tabling	4/21/17	OSER Staff hosted a booth and informed 50 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water and lawn care. Tip Sheets on lawn care management and stormwater best management practices were made available to booth attendees.
The 29th Annual Potomac Watershed Cleanup	4/22/17	The OSER Green Leader Brigade Volunteer Corp cleaned up 240 lbs. of trash along the Ballenger Creek Trail in Frederick.

Type	Date(s)	Description
Middletown Green Expo	4/29/17	OSER volunteers hosted a booth and informed 21 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water and lawn care. Tip Sheets on lawn care management and stormwater best management practices were made available to booth attendees.
Annual Native Plant Sale	4/29/17	The Annual Native Plant Sale was held at the Audrey Carroll Audubon Sanctuary with a large selection of native woody and herbaceous plants as well as information on how to plant and care for them and the benefits of using native plants. The Audubon Society of Central Maryland, an Alliance partner, sponsors the native plant sale.
FCPS Environmental Expo at Tuscarora High School	5/6/17	OSER staff participated in this expo at Tuscarora High School to promote the Green Homes Challenge, Neighborhood Green and Power Saver Retrofit Programs as well as the Green Leader Brigade Volunteer Corps.
Green Neighbor Festival	5/20 and 5/21/17	This exciting two-day event was held around Culler Lake in Frederick's Baker Park and introduced homeowners and business owners to practical steps they can take now to improve their local environment, reduce storm water run-off, make their back yards more hospitable to local fauna, and more. OSER sponsored a booth at this event. A Chesapeake Conservation Corps member with OSER assisted attendees with a fish release event in Culler Lake.
Green Leader Challenge interactive web page	Ongoing	The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are 11 outdoor water conservation actions and 17 other outdoors and yard actions that educate and motivate Challenge participants to adopt lawn care and landscape management best practices. To date, more than 2,094 individuals have registered with the overall Green Homes Challenge and 280 are self-certified as Green Leaders.
Pet Waste		
Frederick County Sustainable Procurement Summit	5/25/17	OSER staff attended the Frederick County Sustainable Procurement Summit. The program offer a unique opportunity for Frederick County municipalities to learn more about best practices in sustainable procurement along with pet waste management from other municipalities in the County and across the state.
Program Planning and Research	6/1/17	OSER staff began the planning stages to incorporate a pet waste program around the County. The first steps involved developing a pet waste survey to research current pet waste management habits among County citizens. OSER hopes to report the results of the survey and the pilot program in the FY18 Annual Report.
City of Frederick meeting	6/15	OSER staff meet with the City of Frederick to discuss the recent pet waste program Scoop-The-Poop campaign successes. http://www.cityoffrederick.com/689/Scoop-the-Poop-Pledge
Frederick County mock up program	6/23	OSER staff first mock up ready for review with parks and recreation.
Septic System Outreach		

Type	Date(s)	Description
Septic Survey	Ongoing	OSER staff developed a septic survey to learn about septic pumpout behavior by citizens. It is available at https://www.surveymonkey.com/r/6WGXR37.
Homeowner's Guide to Septic Systems	Ongoing	OSER staff published Environmental Protection Agency (EPA's) Homeowner's Guide to Septic Systems along with a Septic System checklist at https://www.frederickcountymd.gov/DocumentCenter/View/300313 and is working to develop a program to incentivize septic pumping.
Increasing Proper Disposal of Household Hazardous Waste		
Household Hazardous Waste Day	Bi-annually	The County sponsors two household hazardous waste (HHW) days each year and promotes them widely in the media. Pharmaceuticals (in their original containers) are now acceptable items for drop-off at HHW events.
Household Hazardous Waste Website	Ongoing	A website directs citizens to solutions for household hazardous waste at https://frederickcountymd.gov/3958/Household-Hazardous-Wastes.
Prescription Drug Disposal	Ongoing	There are six sites throughout the county where citizens can safely dispose of their expired and/or unwanted household medicines and prescription drugs. This is a collaborative effort between the community and the Frederick County Health Department and local law enforcement agencies. The locations are: ◦Brunswick Police Department- 20 E. A St., Brunswick, MD 21716 ◦Emmitsburg Community Center- 2nd Floor, 300 South Seton Avenue, Emmitsburg, MD 21727. ◦Frederick Police Department- 100 West Patrick Street, Frederick, MD 21701 ◦Maryland State Police Barracks- 110 Airport Drive E., Frederick, MD 21701 ◦Middletown Municipal Center - 31 W. Main St., Middletown, MD 21769 ◦Thurmont Police Department- 800 Main St., Thurmont, MD 21788
County Web Page	Ongoing	The Department of Solid Waste Management has information available on its website (https://frederickcountymd.gov/529/Landfill-Information) for County residents on various landfill programs, such as disposal of household hazardous wastes, recycling, source reduction, and backyard composting.
Used Motor Oil and Antifreeze Drop-off Sites	Ongoing	The county maintains a list of used motor oil recycling drop-off locations on its website (http://www.frederickcountymd.gov/index.aspx?nid=1753).
Green Leader Challenge interactive web page	Ongoing	The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are 5 actions that educate and motivate Challenge participants to adopt practices that minimize or eliminate household hazardous waste. To date, more than 2,094 individuals have registered with the overall Green Homes Challenge and 280 are self-certified as Green Leaders.
Provide Information to the Regulated Community		
Stormwater Improvement Plans and As-Builts Digital Submission Initial Outreach meeting	2/22/17	Division of Planning Development Review hosted a public meeting with OSER and IIT. To receive input from engineering community for adding digital submissions with CADD layers for approved improvement plans and as-builts.

Type	Date(s)	Description
Stormwater Improvement Plans and As-Builts Digital Submission, Pilot program – first meeting	5/3/17	Division of Planning Development Review, OSER and IIT hosted first pilot group meeting to develop CADD layer standards for digital submission.
Discuss partnership efforts Middletown	6/1/17	OSER staff walked two potential opportunity sites to discuss partnership efforts as well as provide other guidance to the Phase II jurisdiction
Stormwater Improvement Plans and As-Builts Digital submission, Pilot program – second meeting	6/13/17	Division of Planning Development Review, OSER and IIT hosted second pilot group meeting to finalize CADD layer standards for digital submission.
Stormwater Improvement Plans and As-Builts Digital submission, Pilot program start	7/5/17	Division of Planning Development Review, OSER and IIT pilot group started submissions of CADD layer standards for digital submissions of approved improvement plans and as-builts.
Stormwater Improvement Plans and As-Builts Digital submission, Pilot program review and final meeting	8/24/17	Division of Planning Development Review, OSER and IIT pilot group reviewed pilot program. Submissions of CADD layer standards for digital submissions of approved improvement plans and as-builts were progressing well, decided was ready to go public.
Stormwater Improvement Plans and As-Builts Digital submission, open to engineering community	10/2/17	Division of Planning Development Review, OSER and IIT posted on web and email sent to all on outreach members of the approved CADD layer standards for digital submissions by pilot group. https://frederickcountymd.gov/3199/Applications-Checklists
Illicit Discharge Detection and Elimination	2/26/17	The Frederick News Post published an article about the County's coordination with MDE to stop illegal discharges from Woodsboro quarry: https://www.fredericknewspost.com/news/environment/state-fines-woodsboro-quarry-after-discolored-water-found-at-israel/article_4382fa6a-004b-55af-8965-7944ef4b6103.html.
Assistance to Municipalities on MS4 compliance	Ongoing	Staff routinely works with municipalities to help with elements of MS4 permit compliance including public outreach, illicit detection and elimination, source identification, and other topics. Some topics such as erosion and sediment control, plan review, and triennial inspections are covered by agreement with municipalities.

Type	Date(s)	Description
Maryland Municipal Stormwater Association	Ongoing	OSER staff served on the Executive Board of the Maryland Municipal Stormwater Association and worked to inform member jurisdictions on policy issues related to stormwater compliance.
Metropolitan Washington Council of Governments	Ongoing	OSER staff served on the Chesapeake Bay Policy Committee at MWCOG and shared information with member jurisdictions on stormwater and Chesapeake Bay policy issues.
Water Quality Technical Advisory Committee	Ongoing	OSER Staff served on the WQTAC, researched water quality trading program best practices, and developed policy positions on behalf of MACo.

Appendix I consolidates Frederick County media files of public outreach activities.

5.6.1 Outreach Related to Monocacy & Catoctin Watershed Alliance (MCWA)

As described in previous Annual Reports, the Upper and Lower Monocacy Watershed Restoration Action Strategy (WRAS) Steering Committees developed the Monocacy & Catoctin Watershed Alliance (MCWA or the Alliance) in order to continue outreach begun during the Upper and Lower Monocacy WRAS efforts and to begin implementation of the Upper and Lower Monocacy WRAS plans.

County staff continued to coordinate with MCWA in FY17. Quarterly meetings enable attendees to discuss educational outreach opportunities as well as develop restoration and protection projects to support water quality and habitat initiatives. Partners involved in MCWA include but are not limited to:

- Local Organizations
  - Audubon Society of Central Maryland
  - Catoctin and Frederick Soil Conservation Districts
  - Catoctin Forest Alliance
  - Frederick County Forest Conservancy District Board
  - Catoctin Land Trust
  - Frederick County Conservation Club
  - Frederick County Master Gardeners
  - Local Citizens
  - Bar-T Mountainside Challenge & Retreat Center
- Regional Organizations
  - Potomac Conservancy
  - Potomac Watershed Partnership
  - Interstate Commission on the Potomac River Basin (ICPRB)
  - Center for Watershed Protection (CWP)
  - Potomac Valley Fly Fishers, Inc.
  - Chesapeake Conservation Corps
  - Trout Unlimited
- Funding Agencies
  - Chesapeake Bay Trust
  - Alice Ferguson Foundation
  - Maryland Dept. of the Environment/U.S. EPA Clean Water Act Section 319 (h) Program

  - Maryland Urban & Community Forestry Committee (MUCFC)
  - National Fish and Wildlife Foundation (NFWF)
  - Chesapeake & Atlantic Coastal Bays Trust Fund
- Educational Institutions
  - Hood College
  - Mount Saint Mary's University
  - University of Maryland Extension Office
  - Frederick County Public Schools (FCPS)
- Government Organizations
  - Frederick County Council
  - Frederick County Executive
  - Frederick County Division of Planning and Permitting
  - Office of Sustainability and Environmental Resources
  - Comprehensive Planning
  - Development Review
  - Permits and Inspections
  - Division of Public Works
  - Division of Utilities and Solid Waste Management
  - Health Department, Environmental Health Section
  - Division of Parks and Recreation
  - Sustainability Commission
  - Municipalities in Frederick County
  - Maryland Department of Natural Resources
    - Forest Service
    - Fisheries
    - Watersheds Program
    - Wildlife & Heritage Service
  - Maryland Department of the Environment
  - Cunningham Falls State Park
  - National Park Service
    - Catoctin Mountain Park
    - Monocacy National Battlefield Park
    - Rivers, Trails and Conservation Assistance
  - U.S. Environmental Protection Agency
    - Environmental Information and Analysis
  - U.S. Fish and Wildlife Service

Public outreach efforts implemented by the Alliance during FY17 included Alliance website updates, the quarterly E-newsletters and the Green Leader Brigade program.

The Alliance website (watershed-alliance.frederickcountymd.gov) includes a list of upcoming of events, past articles, links to quarterly meeting presentations, resources and publications. Information on MCWA is also available in the OSER quarterly e-newsletter, expanding the Alliance's reach to more than 2,200 County households and/or Alliance partners.

The MCWA Watershed Steward Program was developed to recognize the efforts of community members to protect and restore the natural resources of the Monocacy & Catoctin watersheds in Frederick County by implementing conservation and best management practices on their property. Watershed Steward

signs or certificates are available to community members who meet the criteria for one of eight different categories:

1) Improving Watershed Health Through Community Partnerships
2) Rain Garden
3) Forest Conservation Practice
4) Agricultural Conservation Practice
5) Forest Land Protection
6) Farm Land Protection
7) Tree Planting
8) Wildlife Habitat Improvement

Alliance members developed a set of criteria and a nomination form to be completed by the sponsor. The original printing of the signs was funded through a grant from the Chesapeake Bay Trust with a match provided by the Frederick County OSER. In past years, over 180 signs have been distributed and installed around the County.

5.6.2 Outreach Related to the Green Homes Challenge (GHC)

In addition to MCWA, OSER coordinates the Green Homes Challenge (GHC) program. The GHC combines proven outreach strategies and concrete actions in a unified, comprehensive approach that helps Frederick County residents adopt environmentally friendly practices, reduce energy use and utility bills, and use renewable energy.

The framework for the Challenge is a three-level Green Homes Challenge Certification Program; however, the educational, incentive, loan, and cooperative purchasing components are available to all whether or not residents choose to complete certification. The program incorporates incentives and behavior change strategies and is designed to meet the needs of people who like to do things themselves, prefer one-on-one mentoring, or are motivated by group participation.

The three Challenges and corresponding certification levels are:

1. Be a Power Saver -- Save Our Energy, Bank Your Money!

   Focuses on engaging and educating Frederick County households about the benefits of saving energy; emphasizes home energy audits, energy saving action plans, and retrofit projects.

2. Be a Green Leader -- Green Your Lifestyle, Protect Our Resources!

   Focuses on changes households can make related to their transportation, food choices, homes, yards, and offices that are environmentally friendly and reduce greenhouse gases. There are specific sections of this Challenge devoted to waste management, indoor and outdoor water conservation, and outdoor and yard maintenance practices to protect and improve water quality. This Challenge officially launched summer 2012.

3. Be a Renewable Star -- Renew Your Energy, Clear Our Air!

Focuses on promoting renewable energy options through purchasing green power and renewable energy credits, and installing renewable energy systems with assistance from grants and cooperative purchasing (Launched 2013).

The outreach associated with the Green Leader Challenge focuses on improving water quality and addresses permit-suggested outreach topics. As of June 30, 2017, more than 2094 households had registered with the Green Homes Challenge and 280 households had completed Green Leader Certification. The Green Homes Challenge Recognition Event was held on March 23, 2017.

Evaluation: Frederick County continues to excel in public outreach. Not only has Frederick County addressed all of the suggested topics for outreach in the NPDES permit, it has also extended its public outreach strategy to meet restoration goals. Frederick County has greatly expanded its network through partnerships with local and regional organizations, particularly through the Monocacy & Catoctin Watershed Alliance. Agencies within Frederick County continue to educate the public about water quality through diverse programs.

6 Watershed Assessment and Restoration

6.1 Watershed Assessment

There are five 8-digit watersheds within Frederick County:

- Upper Monocacy River
- Lower Monocacy River
- Double Pipe Creek
- Catoctin Creek
- Potomac River – Frederick County

Watershed assessments for Upper Monocacy River and Lower Monocacy River have been completed during the permit cycle; a more focused assessment was completed for Little Hunting Creek, located in the Upper Monocacy Watershed. The three assessments are described in sections 7.1.1 and 7.1.2 below. The watershed assessment reports were advertised in the Frederick News-Post and were available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

Assessments of the remaining watersheds (Double Pipe Creek, Catoctin Creek, and Potomac River) will be discussed during the next Annual Report submission as they will commence in Fall 2017.

Frederick County created watershed restoration action strategies (WRAS) and watershed assessments for several watersheds:

- Upper Monocacy River WRAS, completed May 2005 (Frederick County, 2005)
- Lower Monocacy River WRAS, completed May 2004 (Frederick County, 2004)
- An Assessment of Stream Restoration and Stormwater Management Retrofit Opportunities in Lower Bush Creek Watershed, completed in August 2003 (Perot, Morris et al., 2003)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Ballenger Creek Watershed, completed August 2005 (Perot, Morris et al., 2005)

- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Linganore Creek Watershed, completed June 2006 (Perot, Morris et al., 2006)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Bennett Creek Watershed, completed April 2009 (Stribling et al., 2009).
- Final Report Watershed Assessment of Ballenger Creek, completed January 2001 (Roth et al., 2001a)
- Watershed Assessment of Lower Bush Creek, completed March 2001 (Roth et al., 2001b)
- Watershed Assessment of Lower Linganore Creek, completed in June 2002 (Perot, Morris et al., 2002)
- Bennett Creek Watershed Assessment, completed March 2008 (Stribling et al., 2008)

6.1.1 Lower Monocacy River Water Assessment

The Lower Monocacy River watershed is 169,117 acres in size and is located within Frederick County, Carroll County, and Montgomery County. A watershed assessment was conducted to provide a roadmap for meeting NPDES Phase I and Chesapeake Bay TMDL requirements. The watershed assessment analyzed existing conditions, identified priority areas for restoration, prioritized restoration projects to address target pollutants, developed cost estimates for implementation, proposed a schedule for implementation, discussed education and outreach opportunities, and established a process for monitoring and measuring project success. There were four assessment components:

1. Evaluate Existing Stormwater Management Best Management Practices.
2. Re-evaluate proposed projects from previously completed watershed assessments
3. Conduct a visual survey of untreated impervious areas
4. Conduct spot stream assessments at a sampling of road crossings.

The assessment identified privately- and publicly-owned properties for retrofit options, then ranked them and proposed the top 45 sites for potential implementation by the County. The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.2 Upper Monocacy Watershed Assessment

The Upper Monocacy watershed covers approximately 204 square miles and has about 424 miles of streams. A watershed assessment was conducted to provide a roadmap for meeting NPDES Phase I and Chesapeake Bay TMDL requirements. The watershed assessment analyzed existing conditions, identified priority areas for restoration, prioritized restoration projects to address target pollutants, developed cost estimates for implementation, proposed a schedule for implementation, discussed education and outreach opportunities, and established a process for monitoring and measuring project success. The assessment identified privately- and publicly-owned properties for retrofit options, then ranked them and proposed the top 45 sites for potential implementation by the County. Frederick County is currently reviewing public comments for incorporation into the Upper Monocacy Watershed Assessment report.

Assessments of effectively treated Green Infrastructure within the Upper Monocacy Watershed are also underway. These include studies of open section roads, roof drains, and other disconnected impervious surfaces.

The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.3 Little Hunting Creek Watershed Assessment and Restoration Concept Report

The Little Hunting Creek watershed lies within the Upper Monocacy Watershed and covers approximately 10-12 square miles. A watershed assessment was conducted to determine the most beneficial stream and watershed restoration actions. Results of the assessment were used to prioritize sites and areas that would benefit most from restoration activities and achieve water quality improvements and pollutant and sediment load reductions. A desktop assessment was conducted to identify potential sites for stream improvements. Detailed site assessments were conducted and potential projects were identified based on identified impairments of concern for the watershed, feasibility of implementation, and the potential for ecological and biological uplift of the watershed. Five potential restoration projects were identified. An assessment of each project was conducted to determine pollutant load reductions, impervious surface treatment area, and a cost estimate in order to determine a cost benefit analysis. - Based on this, two priority projects were identified that would provide a greater benefit with a lower cost (EA, 2016).

The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.2 Restoration Plans

As a requirement of sections PART IV.E.2.a and b of the NPDES MS4 Discharge Permit issued by MDE to Frederick County, the County developed and submitted the *Frederick County Stormwater Restoration Plan* to MDE in June 2016 (a court-issued postponement of six months at the behest of Frederick County Government) which addresses twelve TMDLs for local waterways, two TMDLs for the Chesapeake Bay, and impervious area restoration.

On June 30, 2016, Frederick County submitted fourteen TMDL Restoration Plans including twelve local and two Chesapeake Bay TMDL Restoration Plans to satisfy this requirement as part of its Frederick County Stormwater Restoration Plan (Frederick County, 2016b).

Updates to *Frederick County Stormwater Restoration Plan* are in progress and will be submitted to MDE in January 2018. An extension was granted via correspondence with Pat Dempkin, Frederick's Permit Administrator. Correspondence with MDE regarding the Restoration Plan can be found in Appendix J.

The BMPs outlined in this plan are continually updated in the MDE geodatabase submission as projects are updated. MDE_NPDES_MS4 geodatabase tables with these updates include: AltBMPPoly (60 features), AltBMPLine (8 features), AltBMPPoint (217 features), and RestBMP (32 features).

Frederick County's Stormwater Restoration Plan demonstrates that Frederick County Government is on track to meet the restoration efforts required under its current permit and has a long term plan to address its portion of stormwater wasteload allocations (SW-WLAs) for all TMDLs in Frederick County. This Plan presents the projects and programs that will provide treatment towards its impervious area restoration and TMDL requirements.

Frederick County Government submitted a supplemental impervious area assessment to the Maryland Department of the Environment (MDE) on May 1, 2017 in response to its February 17, 2017 request. The County's revised impervious area assessment conforms to MDE guidance in Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Permits (MDE, 2014). MDE also requested additional specified information on the MS4 regulated permit area, existing urban BMPs, impervious areas in rural areas, and total impervious areas not treated to the maximum extent practicable. The service area definition used by Frederick County

differed from MDE's request in one key area; that the assessment should be county boundary to boundary. At that time the matter was pending a circuit court decision. Since that time a decision has been rendered by the court and the matter taken to the Court of Special Appeals. The issue is still in litigation but a stay no longer exists on compliance with this issue. The County has since contracted with the consultant KCI to revise its impervious cover analysis using a method consistent with what was submitted to MDE, with one key difference. KCI will use the jurisdictional boundary for the County as requested by MDE. MDE asserts in its October 31, 2017 review that contrary to the County's baseline calculation (using the method it determined to be consistent with the Clean Water Act and Code of the Federal Register) of 5,063 untreated acres, that the baseline (using MDE's term of art) is 13,198 acres. Previously, the County estimated its 20% retrofit to be 1,013 acres; however, MDE's estimate is 2,620 acres. MDE invited the county to redo its impervious cover analysis and resubmit in the fourth year Annual Report, which Frederick County will complete in FY18.

The individual plans in the County's Restoration Plan are organized by Restoration Tier. Restoration Tiers include Baseline, Completed, Programmed, Identified, and Potential scenarios. Baselines are the TMDL loads without restoration BMPs. Completed projects were finished after March 11, 2007, the expiration date of the previous permit, and June 30, 2017, the end of the previous fiscal year. Programmed projects are either funded by the County's Capital Improvement Program or other programs during the permit term, which is set to expire December 30, 2019. Identified projects can be found in the County's Watershed Assessments, Watershed Management Plans, Restoration and Retrofit Assessments, Stormwater Master Plans, and other documents completed by Frederick County Government and its partners and consultants to identify watershed restoration opportunities. Potential Projects are hypothetical projects based on the most cost-effective BMP types and acres of available land.

The Restoration Plan should be viewed as a planning document that is subject to the County's review and revision in future years consistent with adaptive management, which is a cornerstone of any good stormwater program. The plans include estimated dates and costs for completion of various projects that may change over time. The County plans to substitute projects based on lessons learned in earlier years. This plan assumes certain efficiencies for BMPs as a part of the development of the plans. Better information that improves efficiencies will be captured in future plan revisions. The County's ability to implement milestone actions depends on approval and funding from the local governing body in future years. The Restoration Plan is subject to future refinement by the County based on new or additional information. The County conducted this effort in-house and is working to update its Restoration Plans with the consultant KCI. MDE commented in its October 31, 2017 Annual Report review that the stormwater restoration plan needs to have deadlines for each individual TMDL rather than for the overall TMDL restoration plan; furthermore, MDE suggests that the 269 year timeframe proposed by the County can be shortened to several decades. Frederick County will ensure the updated plan will include individual TMDL updates and targeted deadlines to reach the targeted reductions. Frederick County noted in its plan that future options for relief such as water quality trading could potentially significantly reduce the timeframe to comply with the plan; these options do not yet have a regulatory framework but should be considered for the plan update and the next submission of the Financial Assurance Plan in December 2018. The Plan will also be affected by updates to the Impervious Cover Analysis.

Table 8 summarizes types of project completed, programmed, and identified within the County, and Appendix K lists the County completed projects. More detailed information about the County's restoration efforts will be found in the restoration plan updates to be submitted in January of 2018. Note that these efforts do not yet include septic pumpouts or water quality trades.

Table 8 - FY17 Complete, Programmed, and Identified Impervious Restoration Credit by Type

Strategy	Completed	Programmed	Total Credit (by end of permit term)		Identified (After December 29, 2019)
Retrofit					
Wet Pond	12	313	**325**		102
Filtering		2	**2**		
New Stormwater					
Bioretention	4		**4**		5
Bioswale	3		**3**		
Wet Pond		7	**7**		28
Stream Restoration	49	69	**118**		40
Tree Planting	35	160	**195**		80
Septic Denitrification	55		**55**		
Septic Connections to WWTP	3		**3**		
Vacuum Street Sweeping[1]	25		**25**		
Total	**186**	**551**	**737**		**255**

1. The County is conservatively estimating credit of street sweeping activities for this reporting year based on average tons swept in FY15-FY17.

6.3 Public Participation

As required by Part IV.E.3 of the MDE NPDES MS4 Discharge Permit, public participation is required for Frederick County's watershed assessments and restoration plans. The specific requirements include:

1. Notice in a local newspaper indicating a 30-day public comment period for each watershed assessment and restoration plan,
2. Notice in a local newspaper announcing that public information procedures are provided on the County's website for each watershed assessment and restoration plan, and
3. A summary in the Annual Report on public participation activities for each of the watershed assessments and restoration plans.

Frederick County has completed several assessments and posted drafts to its website. The drafts of the following assessments were advertised through the Frederick News Post (Appendix L) and posted to the website for a 30 day public comment period with no comments received, which ended on November 26, 2017:

- Upper Monocacy Watershed Assessment
- Lower Monocacy Watershed Assessment
- Ballenger Creek Stormwater Master Plan
- Little Hunting Creek Watershed Assessment and Restoration Concept Report
- County-owned Stormwater Management Best Practices Retrofit Assessment, and
- Point of Rocks Storm Drain Analysis

6.4 TMDL Compliance

The *Frederick County Stormwater Restoration Plan* is in progress and will be submitted to MDE in January 2018. The Restoration Plan includes the County's approach to addressing its local TMDL requirements including three bacteria, four phosphorus, and five sediment local TMDLs as well as nitrogen and phosphorus Chesapeake Bay TMDLs, and impervious area reduction requirements. Additionally, the geodatabase is consistently updated with updates from the restoration program.

Baseline, target, permit and current loads for nutrient, sediment, and bacteria local TMDLs are presented in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment. Countywide baseline, target, permit and current loads are presented in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment.

Baseline and target loads including modeling approach and projects included in each of the models are described, in detail, in the Restoration Plan. All County completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives through 12/30/2014 were modeled in the Maryland Assessment Scenario Tool (MAST) to calculate 2014 permit loads, while all treatment through 6/30/2017 was modeled to calculate 2017 current loads.

It is important to note, permit and current loads are only presented in the Annual Report and will not match what is presented in the County's Stormwater Restoration Plan. Permit and current loads are modeled on top of growth (i.e., 2014 land use conditions and 2016 land use conditions, respectively). Background land use loads in MAST increase as new development occurs throughout the years, which is why loads appear to increase between baseline, permit, and current conditions even with additional treatment from stormwater BMPs and other practices. Per guidance from MDE, permittees do not account for growth in local TMDL progress models and is reflected in the County's Restoration Plan and the January 31, 2018 updated Plan as it focuses on achieving the percent reductions without accounting for growth.

The following sections present the methodology and resultant values for baseline, target, permit, and current loads presented in the following tables in the MDE_NPDES_MS4 geodatabase: LocalStormwaterWatershed Assessment and CountywideStormwaterWatershedAssessment.

6.4.1 Local TMDL Requirements

There are currently 12 final approved TMDLs within Frederick County with SW-WLAs. It's necessary for permittees to determine whether their treatment plans can meet TMDL compliance targets, which is usually accomplished through modeling. However, models and calculations used to develop TMDLs are rarely the same ones used for implementation. TMDL modeling is focused on determining the maximum watershed load that will allow the waterbody to meet water quality standards. Implementation modeling does not involve the receiving water, but only the watershed load. The purpose is to determine the level of improvements or treatment that needs to be implemented to reduce existing loads to the TMDL amount.

Because the models are different, absolute values of loads will not be the same. In order to derive the County MS4-specific SW-WLA load reduction targets, MDE's published baseline values for each TMDL need to be recalculated in an implementation model. The implementation model provides a new baseline based on conditions when the TMDL was developed. The load reduction is calculated from the percent

reduction published in the TMDL. The process of matching loads from the TMDL model to the implementation model is called *calibration.*

Calibration Procedure

Nutrient and Sediment TMDLs

Local TMDL baseline loads for nutrients and sediments were calibrated in BayFAST. BayFAST allows users to specify the watershed and jurisdiction to be modeled; therefore, the results include only Frederick County MS4 baseline loads and do not include other municipalities. The results then implicitly represent the disaggregated portion of the baseline load.

The baseline model includes County BMPs installed prior to the TMDL baseline year on top of baseline land use background loads. BayFAST loading calculations are based on the Chesapeake Bay Watershed Model (CBWM). BayFAST allows users to delineate facility boundaries (e.g., watershed, parcel, drainage area) and alter land use information within the delineated boundary depending on the model year. The calibration procedure is as follows:

1. For each local TMDL, a facility boundary for the 8-digit TMDL watershed within Frederick County borders was delineated within BayFAST.
2. All default land use acreages were deleted and regulated pervious and impervious acres were replaced with MAST Local Base County Phase I MS4 urban pervious and impervious acres using the Compare Scenario tool in MAST for the respective baseline year for each local TMDL. This approach inherently disaggregates County MS4 loads from the rest of the NPDES regulated area within the watershed.
3. County BMPs installed prior to the TMDL baseline year were then added to the model.
4. The reduction percentage published in the TMDL document was then applied to the calibrated baseline loads modeled in BayFAST to calculate a calibrated reduction in EOS-lbs/yr.
5. A calibrated SW-WLA was calculated by subtracting the calibrated reduction from the BayFAST baseline load.

Bacteria TMDLs

Bacteria load reductions were modeled using the Watershed Treatment Model, which accounts for primary loads from runoff and secondary sources from sanitary sewers and septic systems. Calibration was performed similarly to the nutrient and sediment BayFAST modeling. However, because bacteria loading rates vary among different types of urban land use, the two land use types in BayFAST were not sufficient for the analysis. They were replicated by using spatial data and overlays as follows:

1. For each local TMDL, a boundary for the TMDL watershed within the Frederick County MS4 jurisdiction was determined with a GIS overlay of the TMDL watershed boundary and the Frederick County MS4 boundary from the MDE Data Center. MDE (Sept. 2017).
2. Urban land use categories from Maryland Department of Planning 2010 land use data (MDP, 2010) were overlaid to define urban land use. This replicated the BayFAST land uses of “regulated pervious developed” and “regulated impervious developed”.
3. County BMPs installed prior to the TMDL baseline year were then added to the model.
4. The reduction percentage published in the TMDL document was then applied to the calibrated baseline loads modeled in BayFAST to calculate a calibrated reduction in bn MPN/yr.

5. A calibrated SW-WLA was calculated by subtracting the calibrated reduction from the WTM baseline load.

Table 9 displays Frederick County nutrient and sediment local TMDLs with baseline loads and SW-WLAs calibrated to BayFAST. Table 9 also shows the same results for the WTM.

Calibrated load reductions calculated based on TMDL percent reductions and baseline loads modeled in BayFAST and WTM as described above will be the target reductions used for TMDL compliance local TMDLs. These values are presented in bold in the Calibrated Reduction column of
Table 9 - Calibrated Nutrient and Sediment Local TMDL SW-WLAs and Target Load Reductions
(EOS lbs/yr for TP, SED; bn MPN/yr for *E. coli*)
.

Pollutant results listed in columns Calibrated WLA and Calibrated Baseline Load are presented in the fields TARGET_LOAD and BASELINE_LOAD, respectively, in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment.

Table 9 - Calibrated Nutrient and Sediment Local TMDL SW-WLAs and Target Load Reductions
(EOS lbs/yr for TP, SED; bn MPN/yr for *E. coli*)

Watershed Name	Watershed Number	Baseline Year	Pollutant	MDE Published Reduction %[1]	Baseline Acres (MAST Local TMDL Base Year)[2]		Calibrated Baseline Load[3]	Calibrated Reduction[4]	Calibrated WLA[5]
					County Phase I MS4 Impervious	County Phase I MS4 Pervious			
Catoctin Creek	02140305	2009	Phosphorus	11.0%	652.0	2,764.7	3,587.8	**394.7**	3,193.1
		2000	Sediment	49.1%	1,214.9	5,715.5	4,821,798	**2,367,503**	2,454,295
Double Pipe Creek	02140304	2009	Phosphorus	73.0%	31.7	121.3	160.8	**117.4**	43.4
		2000	Sediment	46.8%	152.5	833.5	542,574	**253,924**	288,649
		2004	*E. coli*	98.8%	N/A	N/A	260,121	**256,999**	3,122
Lower Monocacy River[6]	02140302	2009	Phosphorus	28.0%	5,348.1	21,884.6	25,644.4	**7,180.4**	18,464.0
		2000	Sediment	60.8%	4,516.9	20,214.0	10,860,496	**6,603,182**	4,257,314
		2004	*E. coli*	92.5%	N/A	N/A	9,434,102	**8,726,545**	707,557
Potomac River Montgomery County	02140202	2005	Sediment	36.2%	10.2	45.8	21,506.0	**7,785.2**	13,720.8
Upper Monocacy River	02140303	2009	Phosphorus	4.0%	781.7	4,170.3	4,696.1	**187.8**	4,508.3
		2000	Sediment	49.0%	764.4	5,434.0	2,401,443	**1,176,707**	1,224,736
		2004	*E. coli*	97.0%	N/A	N/A	3,134,264	**3,040,236**	94,028

Target reduction loads used for TMDL compliance shown in bold text.

1) Published Reduction % from the MDE TMDL Data Center SW WLAs for County Storm Sewer Systems in Frederick County (MDE, 2017).

2) County Phase I MS4 urban impervious and pervious acres for the TMDL baseline year. A query was run using the MAST Compare Scenario tool based on local TMDL watershed split by County and Local Base year.

3) Baseline loads modeled in BayFAST (TP, SED) or WTM (E. coli) using County BMPs installed prior to the TMDL baseline year on top of baseline land use background loads.

4) Calibrated reductions calculated by applying the MDE published percent reduction to the BayFAST / WTM calibrated baseline loads.

5) Calibrated WLAs calculated by subtracting the calibrated reduction from the BayFAST /WTM calibrated baseline load.

6) The Lake Linganore watershed is listed under a separate phosphorus and sediment TMDL and is not included in this analysis.

6.4.2 Bay TMDL

The Chesapeake Bay TMDL, established by the EPA (EPA, 2010), sets pollution limits for nitrogen, phosphorus, and sediment in the Chesapeake Bay Watershed. This TMDL, required under the Clean Water Act, was in response to the slow progress by states within the watershed to limit their pollutants to levels which meet water quality standards in the Bay and its tidal tributaries. Total limits set in the Bay TMDL for the states of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia are "185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus and 6.45 billion pounds of sediment per year—a 25 percent reduction in nitrogen, 24 percent reduction in phosphorus and 20 percent reduction in sediment" (EPA, 2010). The TMDL also sets "rigorous accountability measures" for state compliance.

While not a requirement in the County's MS4 permit, restoration strategies to meet local TMDL reduction targets and impervious restoration treatment were also modeled against the Bay TMDL goals in order to calculate progress. The County's MS4 permit is requiring compliance with the Chesapeake Bay TMDL through the use of the 20% impervious surface treatment strategy as described in greater detail in the Restoration Plan. Results for 2014 permit and 2017 current loads can be found in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment.

6.4.3 Pollutant Loadings

The results below present 2014 permit and 2017 current loads for all TMDLs.

All completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives through 12/30/2014 were modeled in MAST to calculate 2014 permit loads, while all treatment through 6/30/2017 was modeled to calculate 2017 current loads. Permit and current loads for nutrient and sediment local TMDLs are presented in

Table 10 - Permit and Current Loads for Nutrient and Sediment Local TMDLs and in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment. Countywide permit and currently loads are presented in **Error! Reference source not found.** and in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment.

Table 10 - Permit and Current Loads for Nutrient and Sediment Local TMDLs

Watershed Name	Watershed Number	Pollutant	Permit Load[1]	Current Load[2]
Catoctin Creek	02140305	Phosphorus	3,587.1	3,587.1
		Sediment	4,821,798	4,821,798
Double Pipe Creek	02140304	Phosphorus	160.8	160.8
		Sediment	542,573	542,573
		E. coli	236,455	236,455
Lower Monocacy River[6]	02140302	Phosphorus	27,895.5	25,446.0
		Sediment	11,430,214	10,699,649
		E. coli	9,392,931	9,381,221
Potomac River Montgomery County	02140202	Sediment	21,506	21,506
Upper Monocacy River	02140303	Phosphorus	4,695.6	4,695.6
		Sediment	3,098,896	3,098,896
		E. coli	94,028	94,028

1) Including treatment from County BMPs through 12/30/2014
2) Including treatment from County BMPs through 06/30/2017
3) The Lake Linganore watershed is listed under a separate phosphorus and sediment TMDL and is not included in this analysis.

Table 11 - Countywide Permit and Current Loads

Permit Loads	TN-EOS	TN-DEL	TP-EOS	TP-DEL	TSS-EOS	TSS-DEL
	lbs/yr	lbs/yr	lbs/yr	lbs/yr	lbs/yr	lbs/yr
TMDL Watersheds						
Catoctin Creek	189,318	62,160	8,430	3,955	5,418,395	3,510,542
Double Pipe Creek	30,944	7,698	1,379	647	824,101	533,929
Lower Monocacy River	748,724	422,475	34,045	15,972	15,182,189	9,836,439
Potomac River Frederick County	90,846	66,971	4,212	1,976	2,020,103	1,308,811
Potomac River Montgomery County	1,133	878	50	23	18,903	12,247
Upper Monocacy River	186,398	78,449	7,517	3,526	3,516,802	2,278,513
Current Loads	**TN-EOS**	**TN-DEL**	**TP-EOS**	**TP-DEL**	**TSS-EOS**	**TSS-DEL**
	lbs/yr	**lbs/yr**	**lbs/yr**	**lbs/yr**	**lbs/yr**	**lbs/yr**
TMDL Watersheds						
Catoctin Creek	197,028	64,872	8,762	4,111	5,626,188	3,645,169
Double Pipe Creek	30,936	7,695	1,377	646	820,982	531,909
Lower Monocacy River	800,031	451,473	36,410	17,081	16,248,618	10,527,371
Potomac River Frederick County	93,379	68,841	4,329	2,031	2,072,883	1,343,007
Potomac River Montgomery County	1,144	886	51	24	19,422	12,584
Upper Monocacy River	201,666	85,379	8,064	3,783	3,820,177	2,475,067
Countywide						
Permit Load	**1,247,363**	**638,631**	**55,631**	**26,098**	**26,980,493**	**17,480,481**
Current Load	**1,324,184**	**679,146**	**58,993**	**27,676**	**28,608,269**	**18,535,106**

7 Assessment of Controls

7.1 Watershed Restoration Assessment

During the past year, Frederick County has worked on a number of initiatives to monitor, assess, protect, and restore watersheds. Appendix M provides monitoring and assessment results, and summarizes progress on the County's watershed protection and restoration efforts from July 2016 - June 2017 from the long term monitoring occurring within the Peter Pan Run watershed. Additionally, Appendix N addresses MDE's October 31, 2017 Annual Report comment regarding missing water temperature values for stormflow outfall measurements.

7.1.1 Stream Monitoring to Identify and Evaluate Water Quality Problems

In 1999, Frederick County initiated its original stream monitoring program, the goal of which was to identify and evaluate water quality problems in its priority watersheds and subwatersheds by conducting, on a rotating basis, stream monitoring using both biological and physical habitat methods. Monitoring was conducted every two to three years in the County's three highest priority watersheds: Lower Bush Creek, Ballenger Creek, and Lower Linganore Creek. This continued until 2006.

In 2007, the County conducted a pilot program that would serve as the basis for a new approach to stream monitoring that would begin to look at stream health throughout the County. Sampling at randomly selected locations was performed in the Bennett Creek and Catoctin Creek watersheds. Lessons learned in this pilot project were then used to refine the study design for a County-wide stream program.

In 2008, the County officially redesigned its monitoring program to include two separate monitoring efforts beyond the Watershed Restoration Assessment of the Peter Pan Run watershed: (1) targeted restoration monitoring and (2) County-wide, probability-based stream monitoring, with sites selected randomly and stratified by watershed. The targeted restoration monitoring effort for 2017 involved stream sampling in Bennett Creek, Linganore Creek, Fishing Creek, Hunting Creek, and the Potomac Direct Watershed in support of on-going and potential future restoration and community outreach efforts (Appendix O). Monitoring efforts are selected on an individual project basis based on the projects goals and any regulatory requirements directly related to those projects. The second round of the County-wide stream monitoring began in 2013 and continued through 2016; County-wide stream monitoring results will be presented in a later report as well as posted to OSER's website for public access. The County-wide stream monitoring efforts will be incorporated into assisting the County with the three remaining Watershed Studies described in 6.1 of this Annual Report which are underway in FY18.

7.1.2 Watershed Assessment and Restoration Overview

The County's Watershed Restoration Assessment continued to focus on the Peter Pan Run watershed through targeted stream monitoring assessments including: physical, chemical, and biological data, collected during designated index periods (Southerland et al. 1999, Morgan and Roth 2005). Year 2017

sampling included collection of water quality data, benthic macroinvertebrate and fish sampling, and quantitative physical habitat assessment using MBSS habitat and geomorphic data collection methods. Biological and physical monitoring methods employed in this survey are the same as those listed in Table 1-2 of Appendix M, and described in detail in the Quality Assurance Project Plan for Biological and Physical Monitoring in Peter Pan Run and Other Selected Watersheds (Morgan and Roth, 2005). Key findings are summarized in Appendix M.

The County recognizes MDE's October 31, 2017 Annual report comment regarding E. *coli* and petrochemical hydrocarbons (TPH) values were missing for most storms in the "peak" and "falling" categories and the County will be implementing additional steps to assure these values will be included in the next submission as efforts for this Annual Report ended in June 2017. In addition to these efforts, the County has purchased new water quality monitoring equipment in August 2017 to continue its efforts to properly acquire the required measurements. The new monitoring equipment will be described and presented during the next Annual Report submission.

In another comment in the Annual Report Review, MDE states that temperature data is "missing for stormflow outfall measurements." Frederick County has not previously had temperature data for the outfall station; rather, a YSI multi-parameter probe has only been deployed at the instream station. A temperature logger has been placed at the outfall and initial results are included in this report (Appendix N).

Data for all monitoring activities is included in the in the MDE_NPDES_MS4 geodatabase in the following features and tables: MonitoringSite, MonitoringDrainageArea, ChemicalMonitoring, LocalConcern BiologicalMonitoring, NarrativeFiles.

7.2 Stormwater Management Assessment

A detailed report capturing all of the long-term monitoring occurring in the Peter Pan Run watershed was completed to meet the requirement of the County's NPDES permit. A complete report of the findings can be found in Appendix M.

8 Program Funding

Frederick County has consistently maintained adequate funding to support the requirements of the NPDES program through its Operating and CIP budgets. This section outlines expenditures from FY17, which are also presented in Appendix P.

The Operating Budget requires annual requests, with approval granted from year-to-year. Funds from the Operating Budget generally do not carry over from year-to-year. The CIP Budget noted here requires an annual submission, with approval granted from year-to-year.

The Operating budget for FY17 was $2,673,697 including $1,377,386 in the NPDES Pay-Go Operating budget and an estimated $1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $4,116,148. The total NPDES budget was estimated to be $6,789,845.

The Operating budget for FY16 was $2,650,420 including $1,354,109 in the NPDES Pay-Go Operating budget and an estimated $1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $3,527,575. The total NPDES budget was estimated to be $6,177,995.

The Operating budget for FY15 was $2,383,553 including $1,087,242 in the NPDES Pay-Go Operating budget and an estimated $1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $2,595,847. The total NPDES budget was estimated to be $4,979,400.

More detailed information on budget allocations are reported in the table FiscalAnalyses in the MDE_NPDES_MS4 geodatabase. Fiscal reporting is based on the encumbrance method. Note that MDE's geodatabase excludes several permit categories to include Permit Administration, Legal Authority, and Source Identification. Several large efforts like the geodatabase and Annual Report are not included; the County has noted these expenses in comments. Bay Restoration Fund grants for septic upgrades are also noted in comments. There is a timing lag between budgeting, encumbrances and expenditures, which largely explains why the numbers do not match. The geodatabase reporting does not match the FAP/WPRP reporting by definition.

As required by the Annotated Code of Maryland ENV §4-202.1, Frederick County submitted a Financial Assurance Plan (FAP; Frederick County, 2016a) and Watershed Protection and Restoration Program (WPRP) Annual Report to MDE on July 1, 2016. Both documents provide the five-year funding strategy for addressing the County's NPDES MS4 Permit. The FAP and WPRP Annual Report documents were prepared by County staff. The County Council, as the "local governing body" held a public hearing and voted on approval of the financial assurance plan on August 15, 2016. The FAP and WPRP Annual Report include all activities that have been completed in compliance with the Permit, and five-year projections to Fiscal Year 2020 for the implementation of its stormwater program and best management practices (BMPs) necessary for meeting Permit requirements. MDE sent a letter to Frederick County on October 17, 2016 finding the submissions "sufficient" per legislative requirement and commending the County for its support of the program. An updated WPRP is submitted along with this annual report per legislative requirement.

The County has made a substantial commitment to comply with its Permit, has adequately funded the Permit to the MEP, and is on track programmatically to comply with the Permit to the Maximum Extent Practicable. Funding for the Impervious Surface Restoration Plan by Fiscal Year 2020 is projected to be $52,384,445. This funding is reflected in the past and current budgets, and is in the programmed CIP. This represents 100% of the MEP cost to implement the Permit to the MEP; furthermore, the County has funded its first three years of the Permit at 100%, exceeding the 75% minimum compliance benchmark.

All proceeds from the stormwater remediation fee go to the Watershed Protection and Restoration Fund. In the previous fiscal year this amounted to $487.46.

Evaluation: Frederick County continued to maintain adequate funding to support its NPDES MS4 permit program in Fiscal Year 2017. Adequate funding was requested and approved to meet NPDES requirements in both the Operating and Capital Budgets. MDE found Frederick County in compliance with its Financial Assurance Plan and Watershed Protection and Restoration Plan Annual Report On October 17, 2016. Adequate funding enabled the Watershed Management Section to complete its NPDES requirements in full compliance. An updated WPRP is submitted along with this Annual Report.

9 Special Programmatic Conditions

9.1 Bay TMDL

The Bay TMDL requirements are addressed previously in section 6, specifically in section 6.4.2 Bay TMDL.

Phase II is in place and the County is cooperating with MDE to coordinate Phase III WIPS that account for the 2017 updates.

Staff spoke at a Fall 2016 Watershed Implementation Plan (WIP) Workshop sponsored by the Harry R. Hughes Center for Agro-Ecology and coordinated with MDE. She spoke on tools to help local government to achieve their Chesapeake Bay Restoration goals. Staff at Frederick County Government in OSER and GIS departments have been coordinating with Jeff White of MDE Science Services to exchange and review data for Bay model updates related to the Phase III WIP. Frederick County continues to support the development of the WIP through its involvement with the Maryland Association of Counties, Metropolitan Washington Council of Governments, and Maryland Municipal Stormwater Association.

Staff communications with the Frederick News Post about the importance of Bay funding were published in an article April 14, 2017: https://www.fredericknewspost.com/news/economy_and_business/too-early-to-say-how-bay-program-cut-could-affect/article_511b2856-f30c-5d8c-b8e8-65c3e37e5cd8.html. Staff also wrote a piece for the "Green" Section of the FNP on June 15, 2017 entitled "Changes in Chesapeake Bay Funding": https://www.fredericknewspost.com/news/environment/sustainable-frederick-changes-in-chesapeake-bay-funding/article_a1e7774c-9ca1-578c-9fed-9ce70ca5d418.html.

9.2 Water Resources Element

The Board of County Commissioners formally adopted the complete Water Resources Element (WRE) technical document on September 23, 2010 (Frederick County, 2010). The WRE provides a detailed presentation of the County's water resources plus limitations and challenges to meeting future population needs. Wastewater treatment capacities and future projected treatment needs are also analyzed. The

WRE is divided into three components: Drinking Water Assessment, Wastewater Assessment, and Managing Stormwater and Non-Point Source Pollution.

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